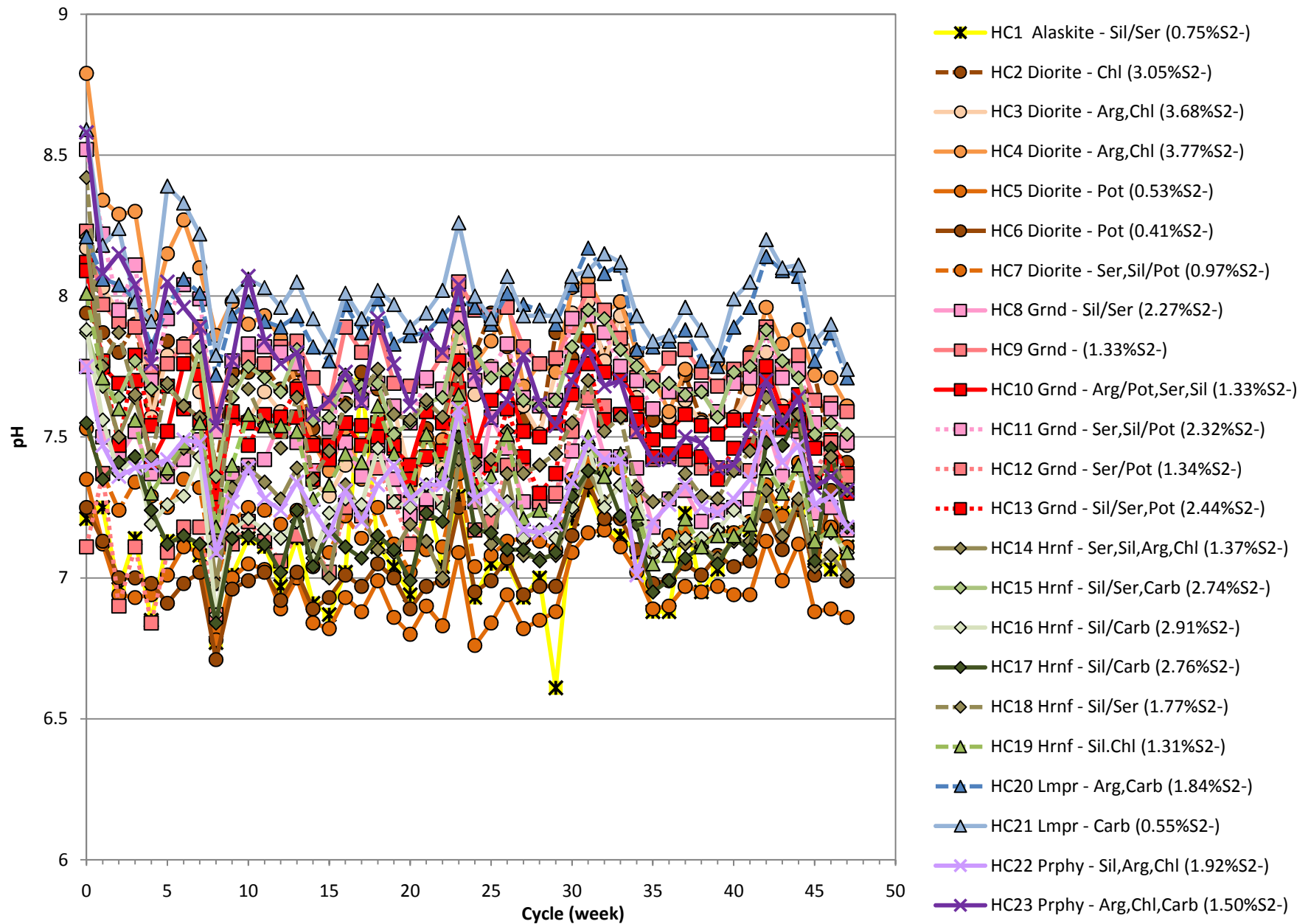
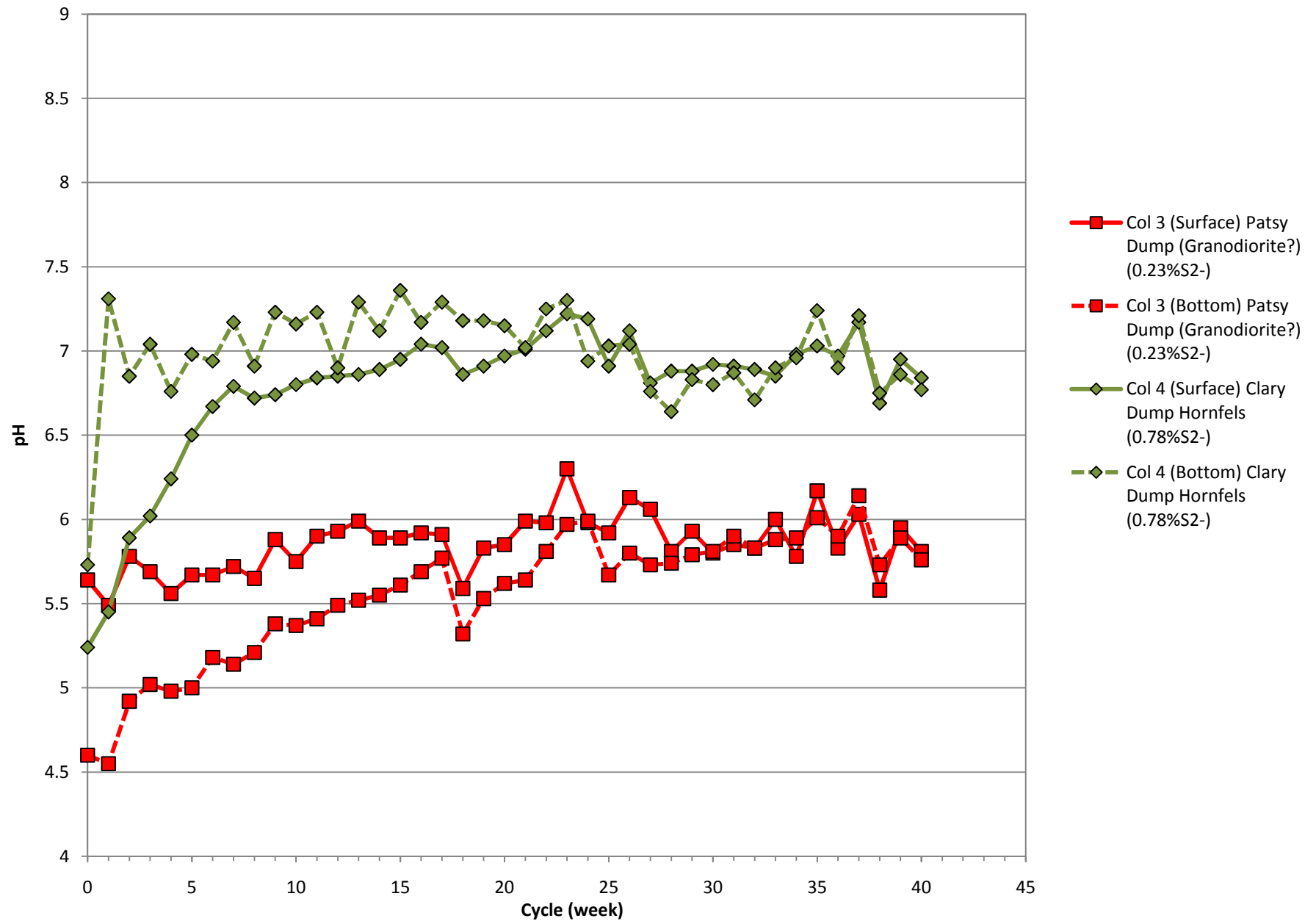


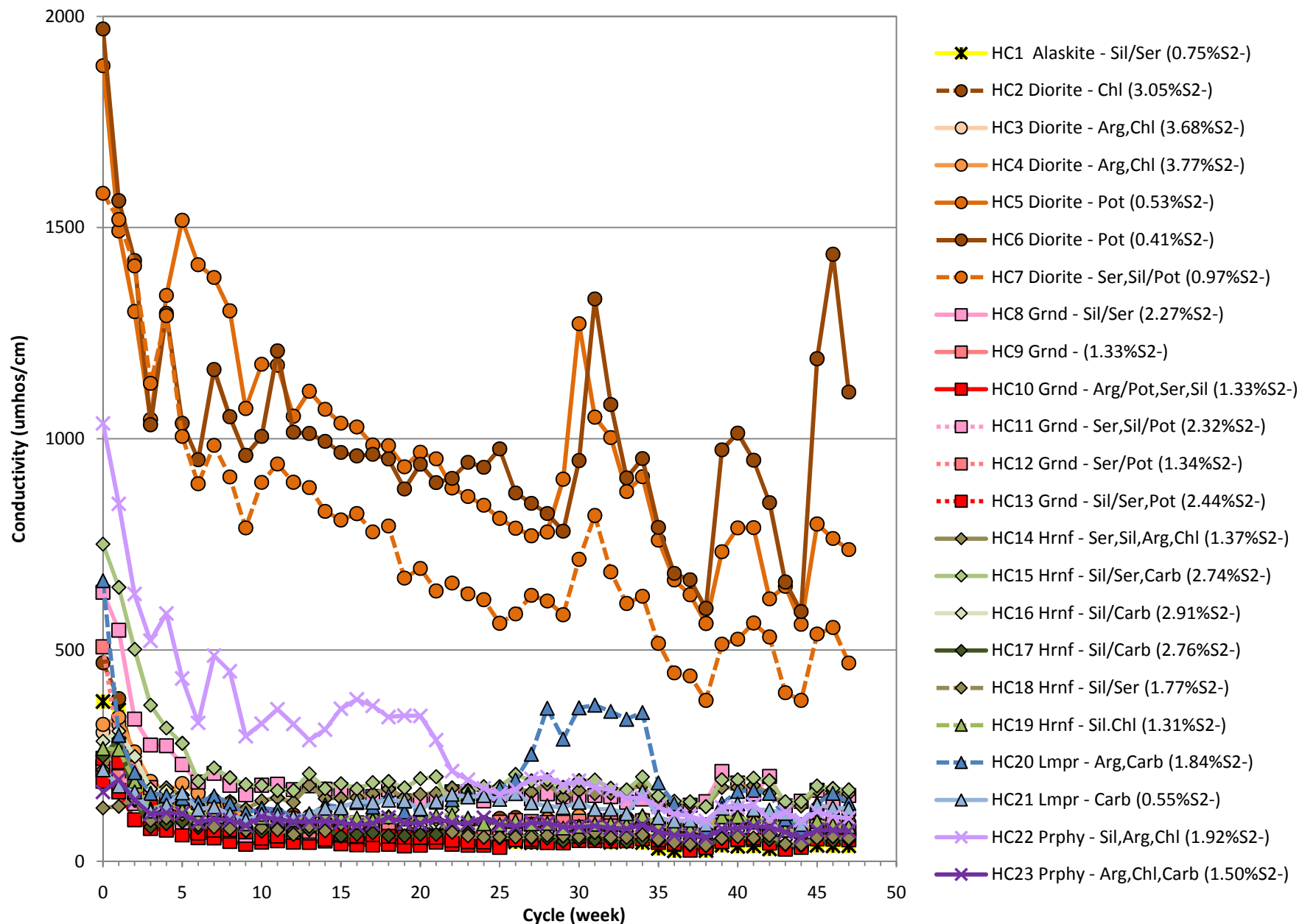
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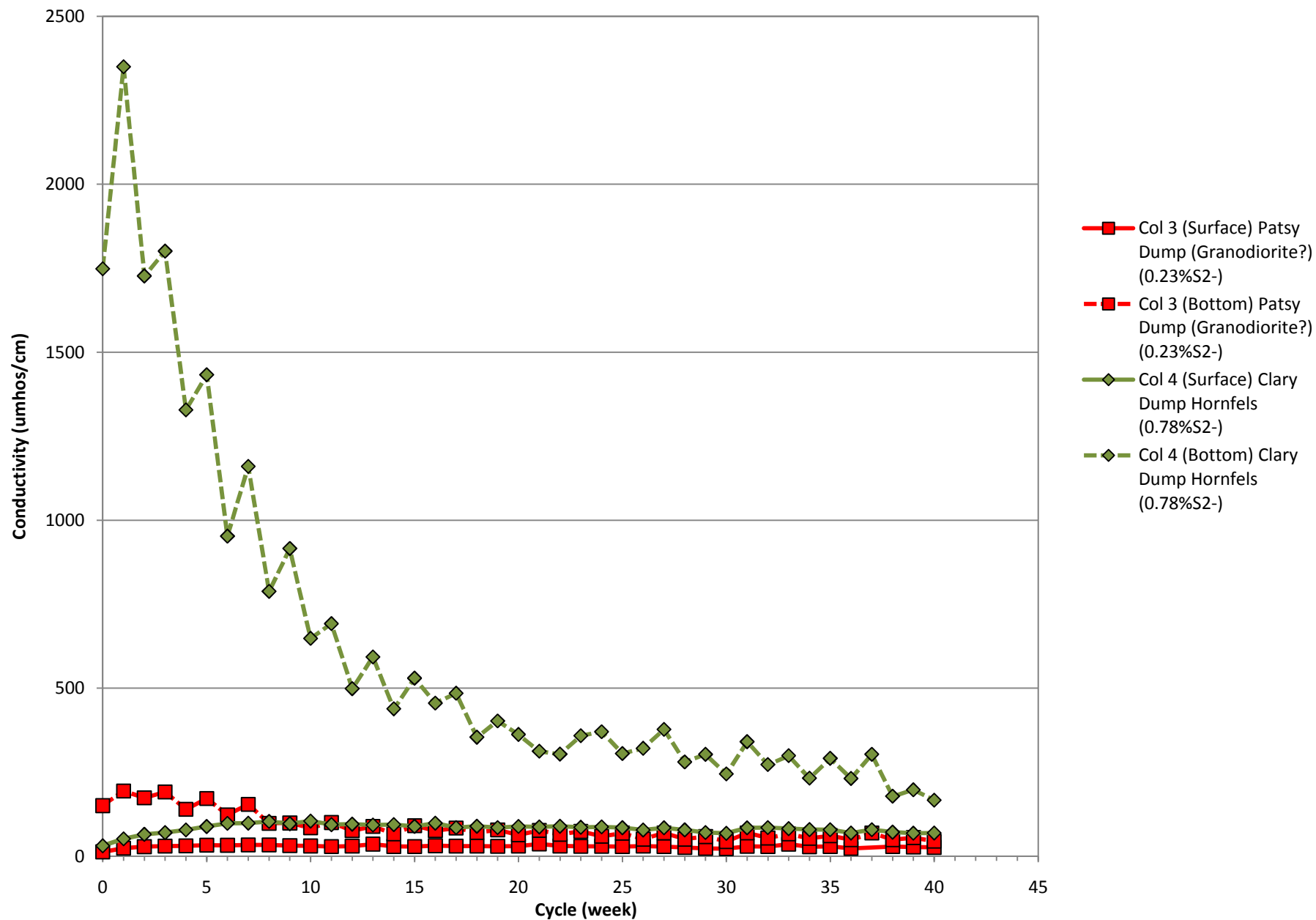
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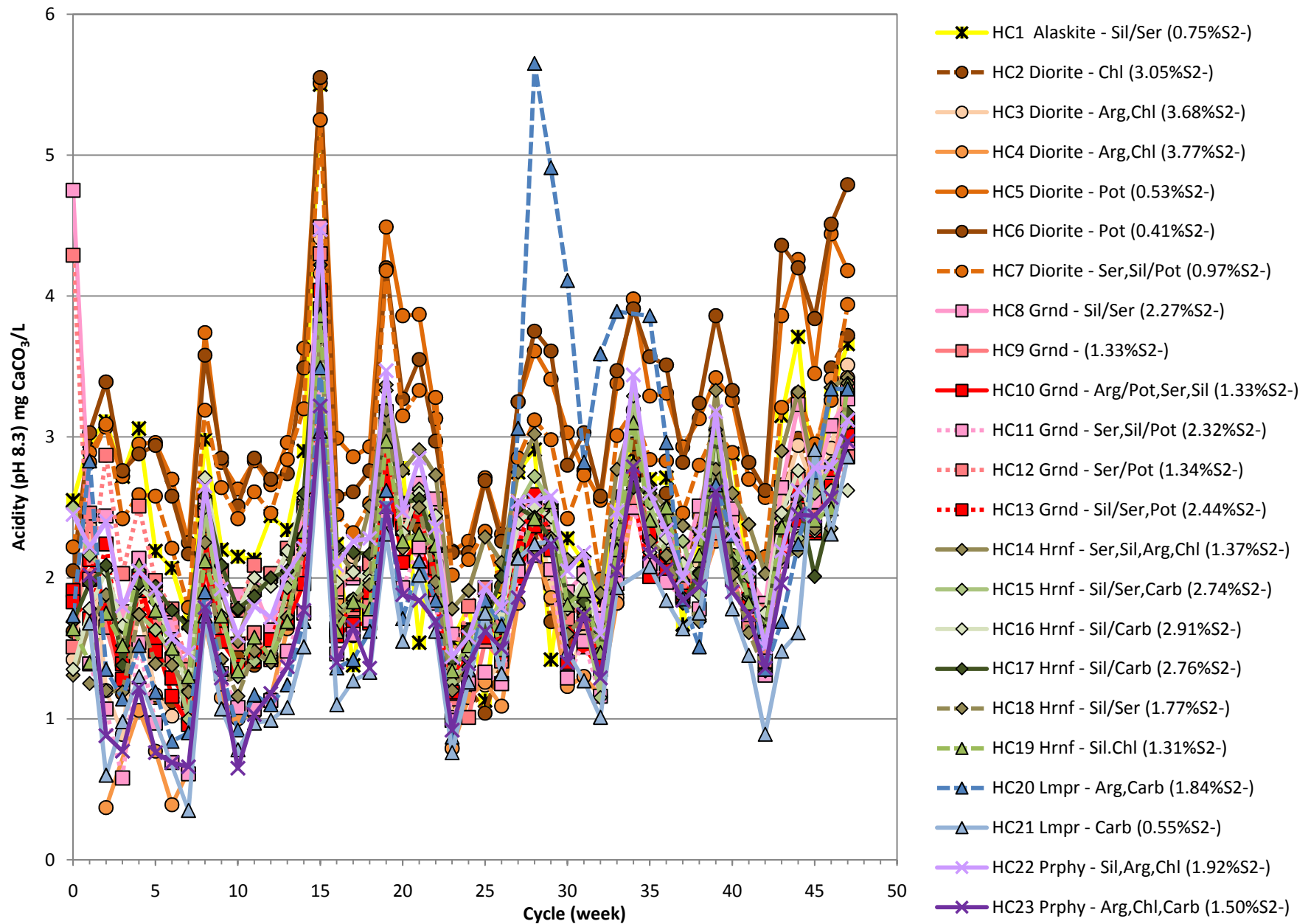
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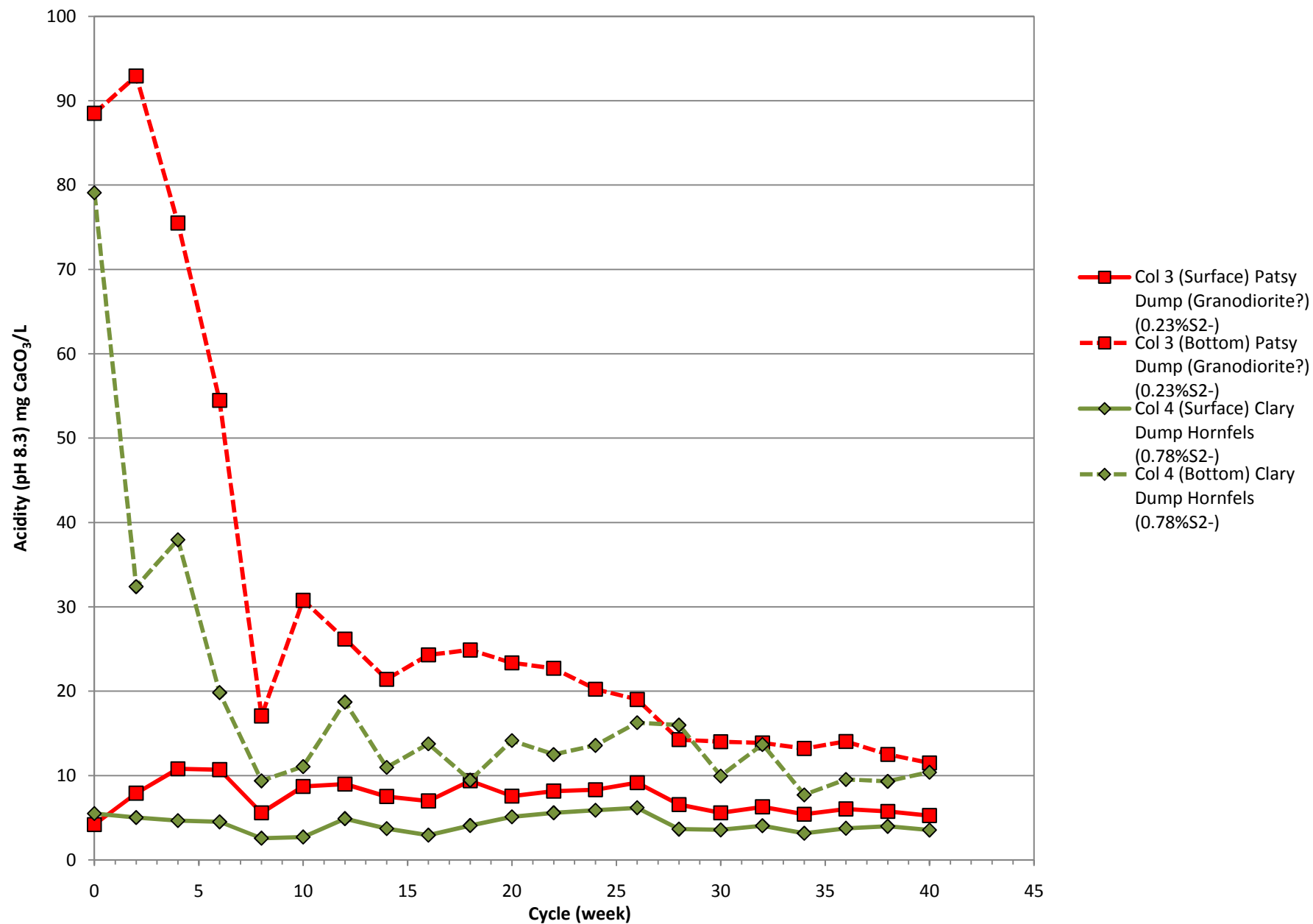
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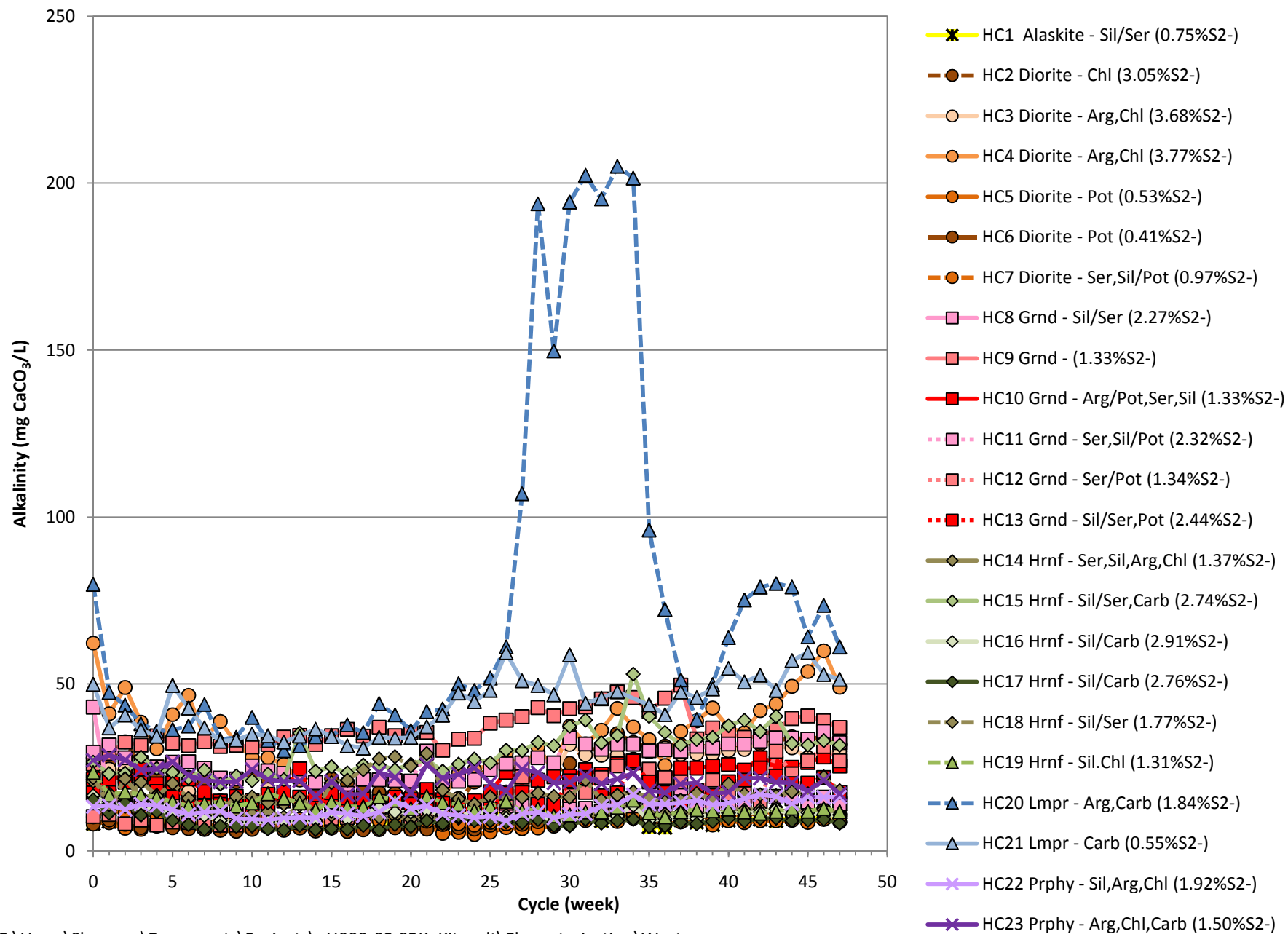
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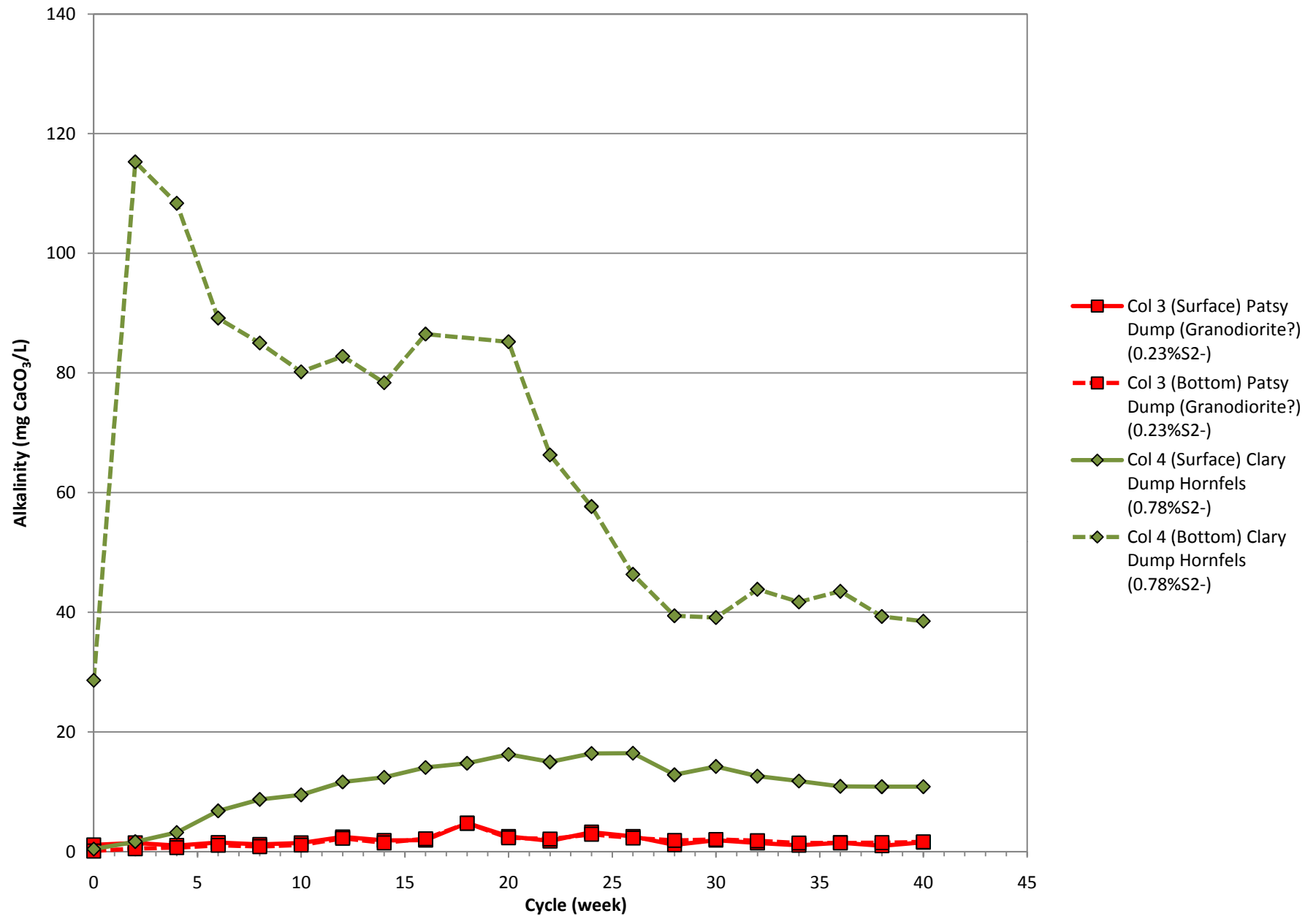
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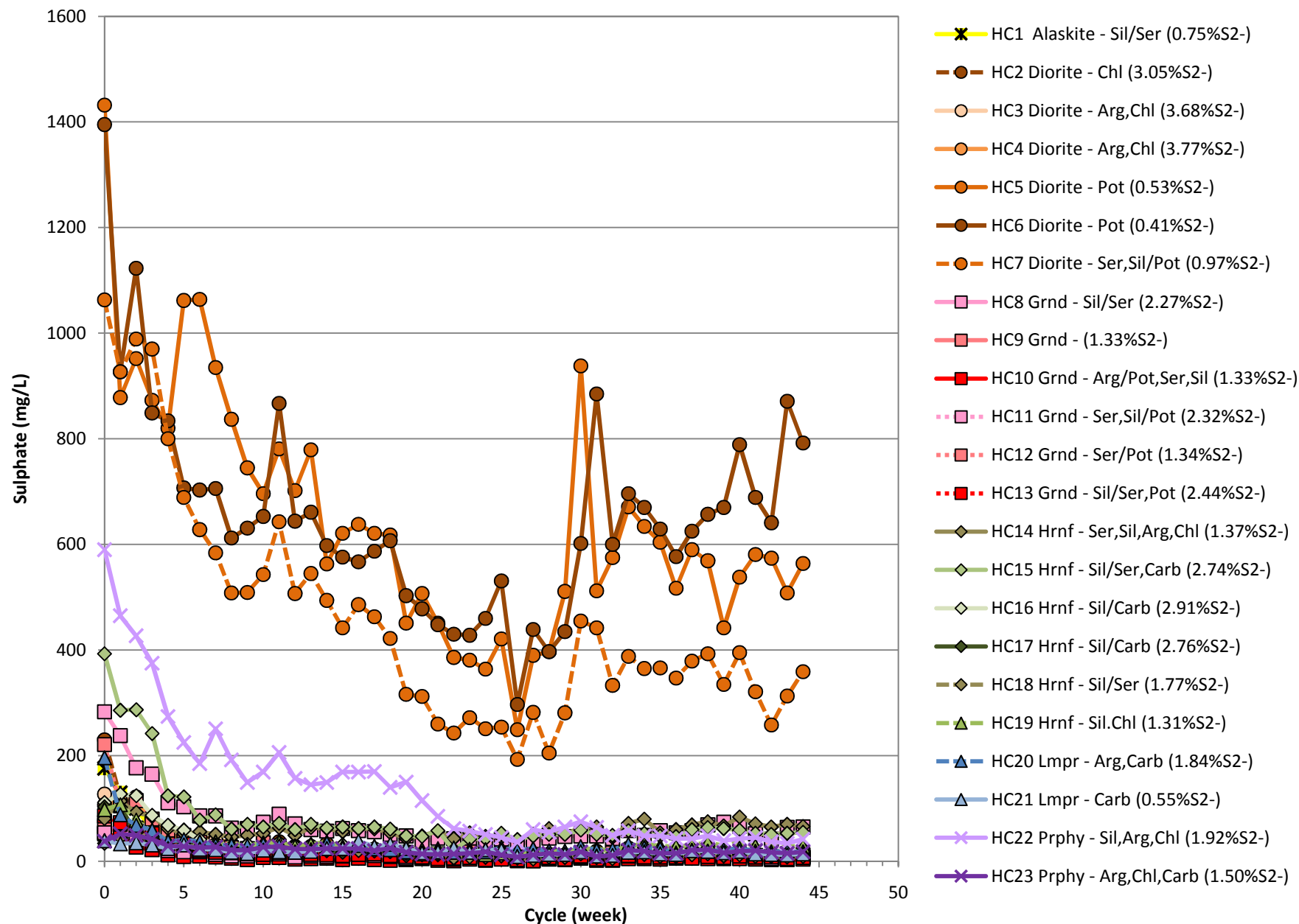
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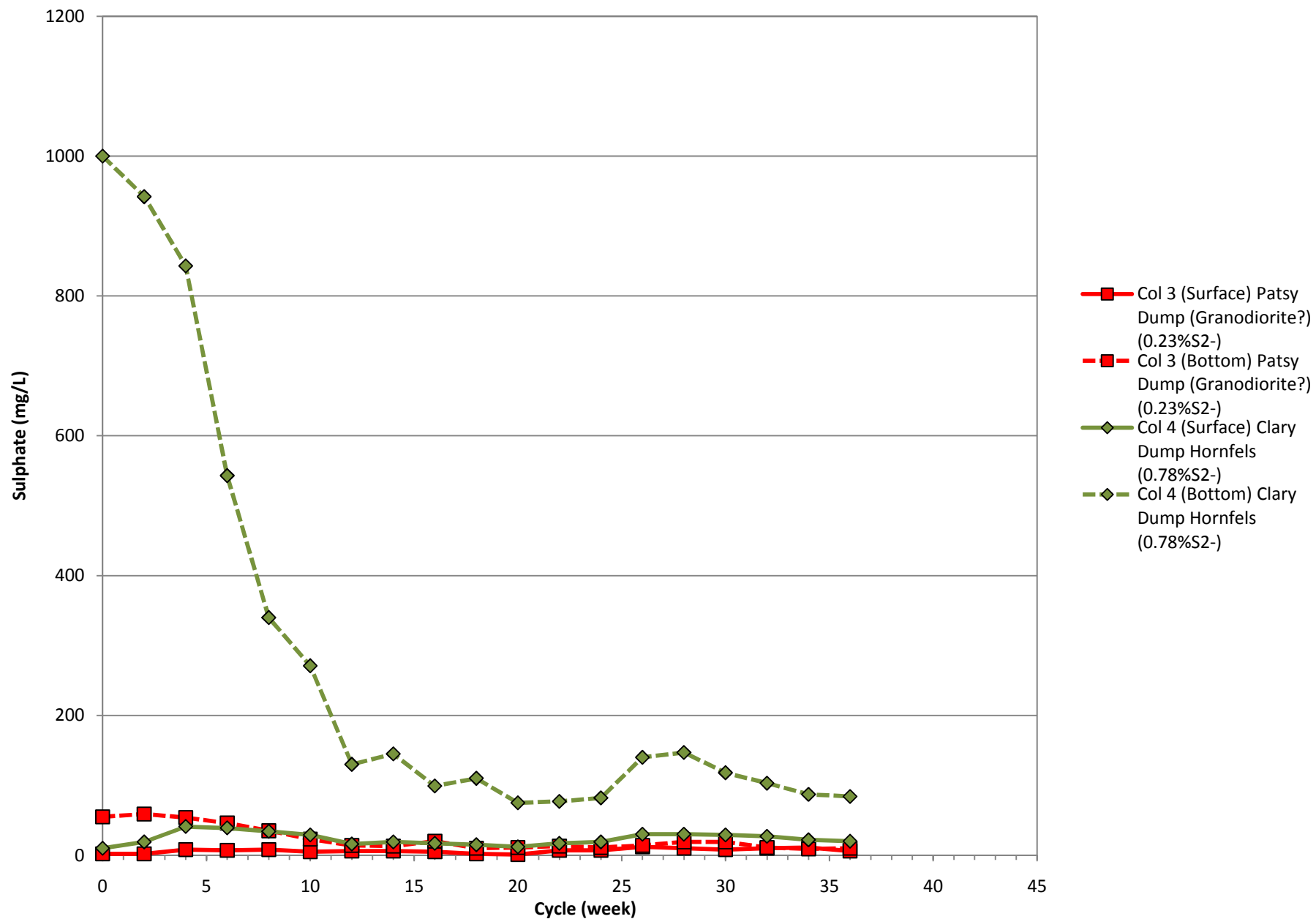
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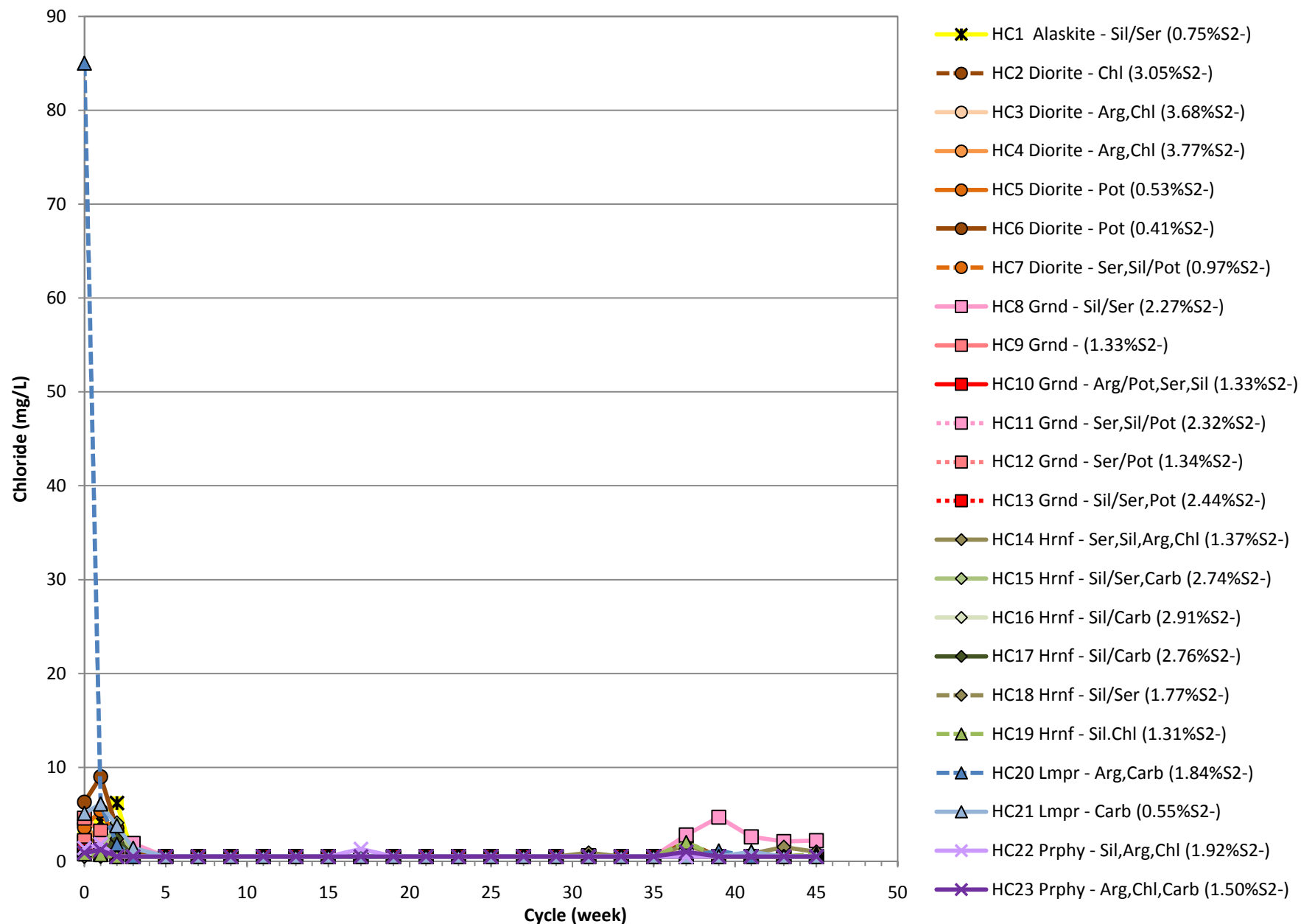
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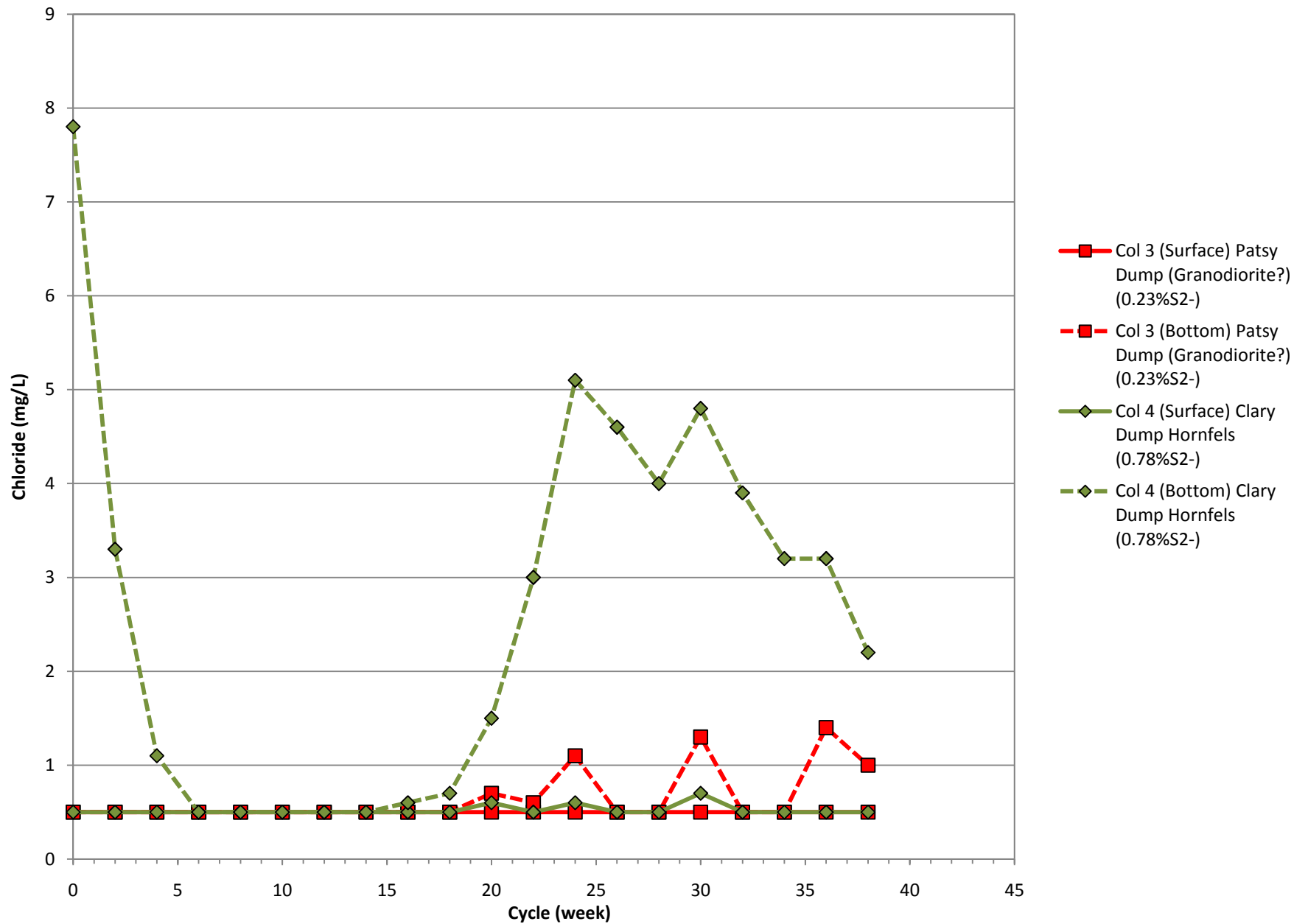
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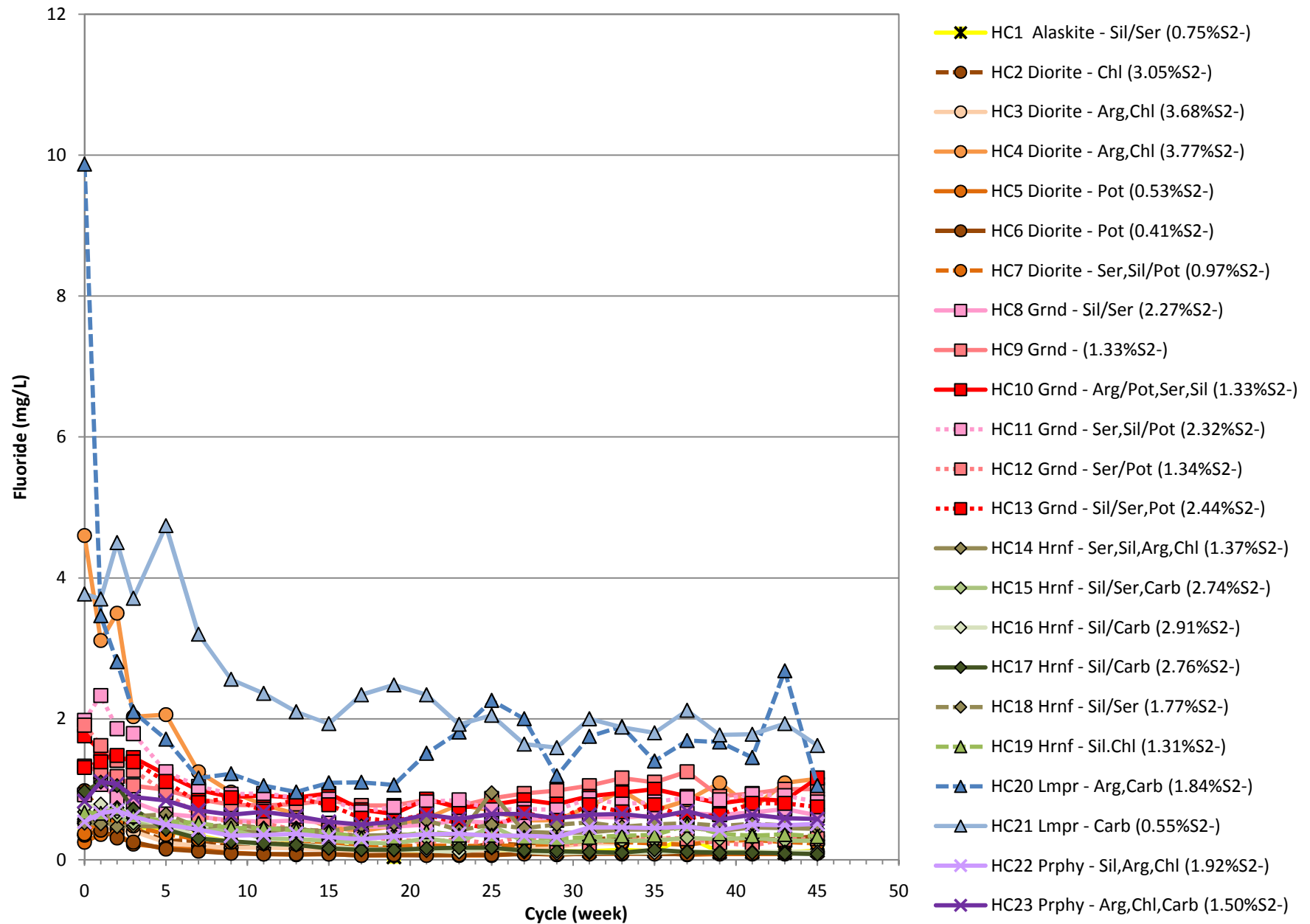
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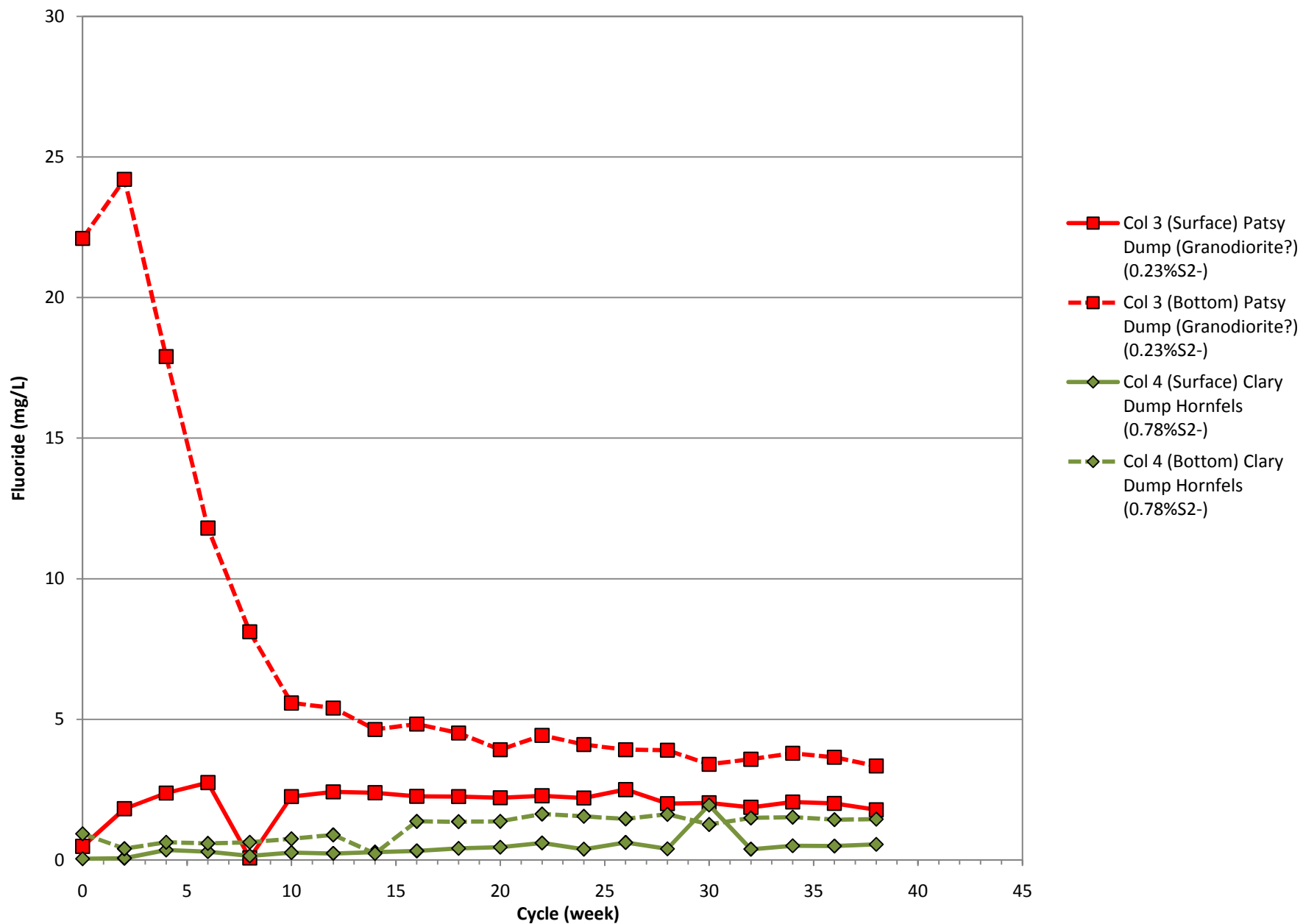
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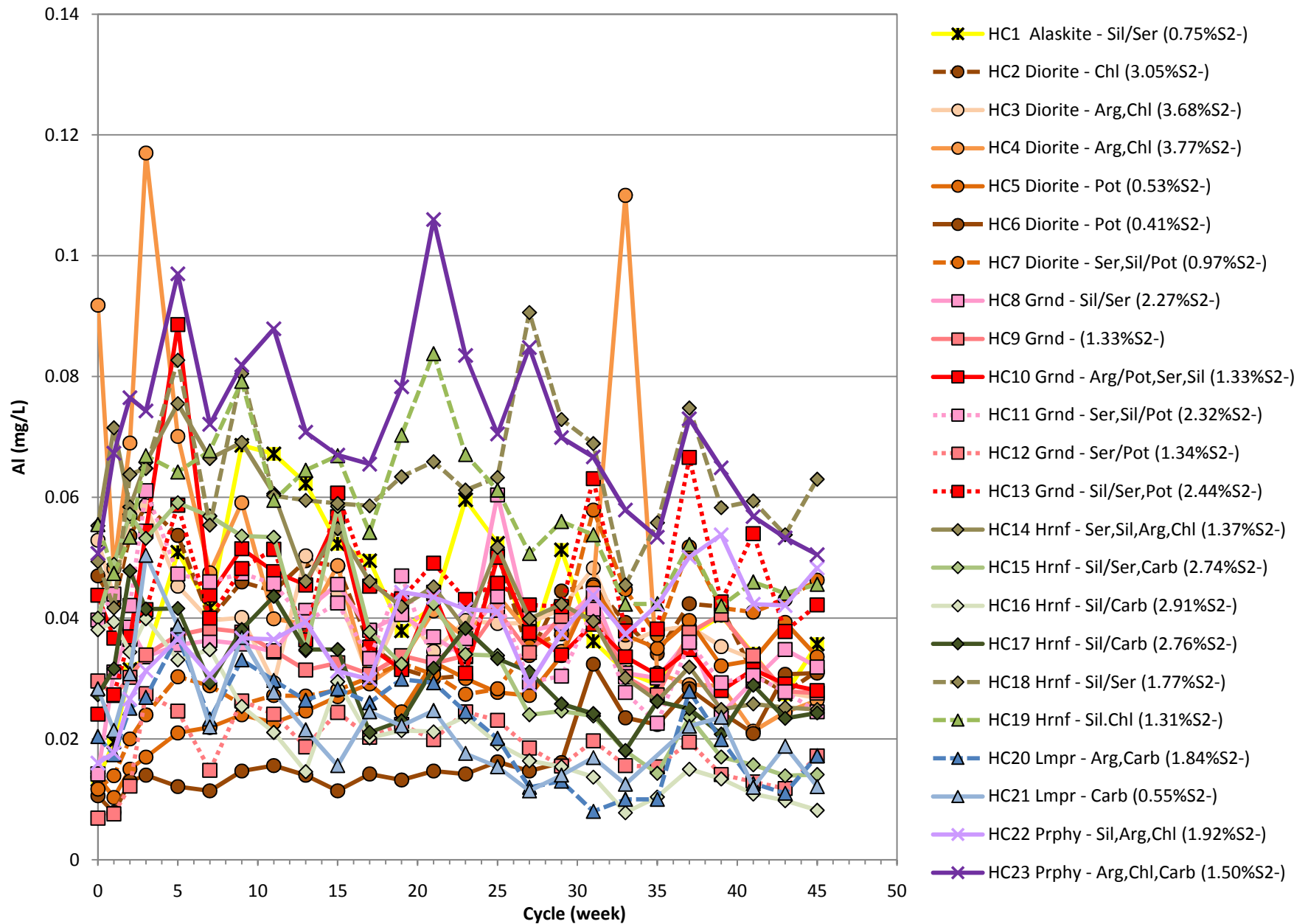
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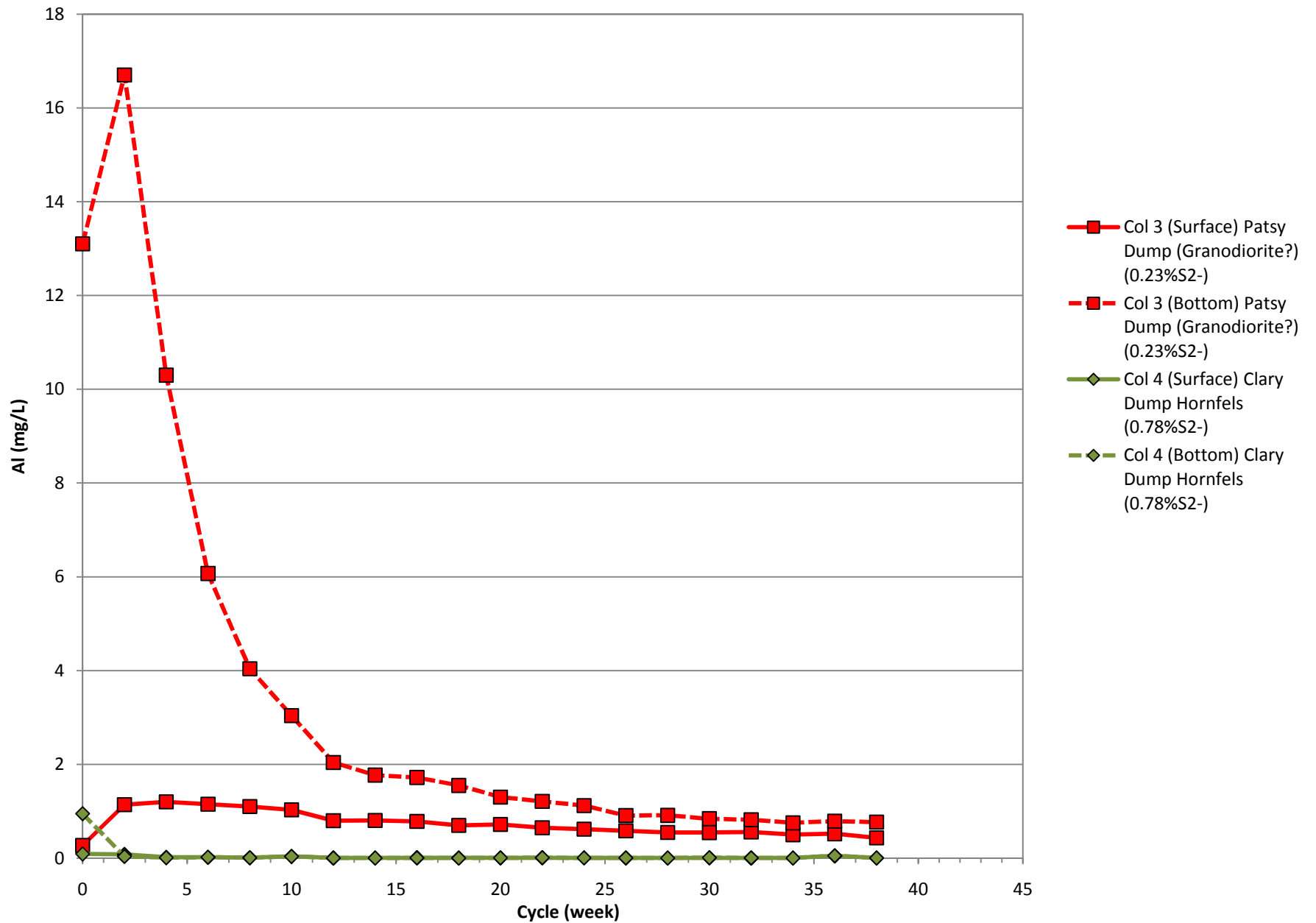
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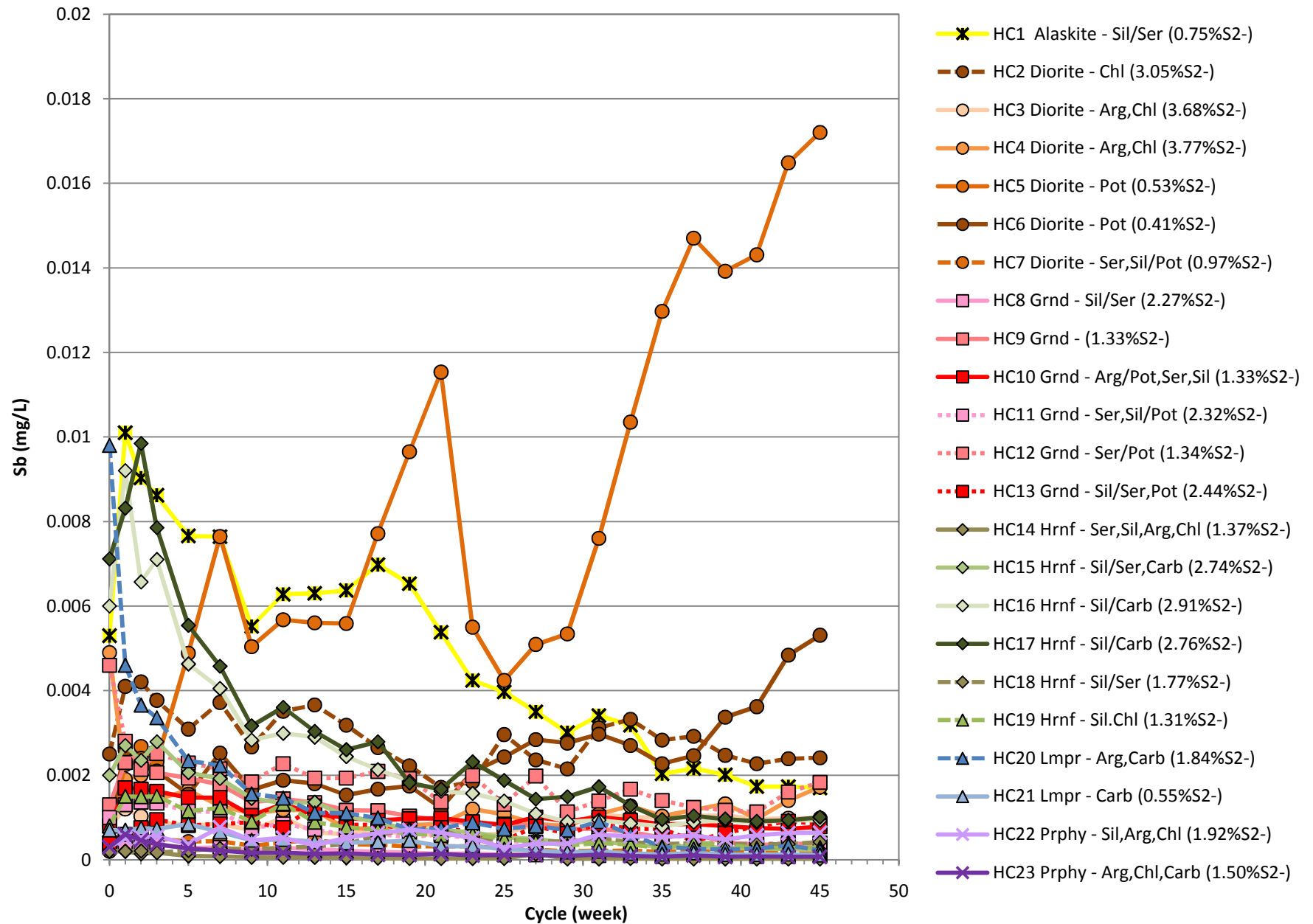
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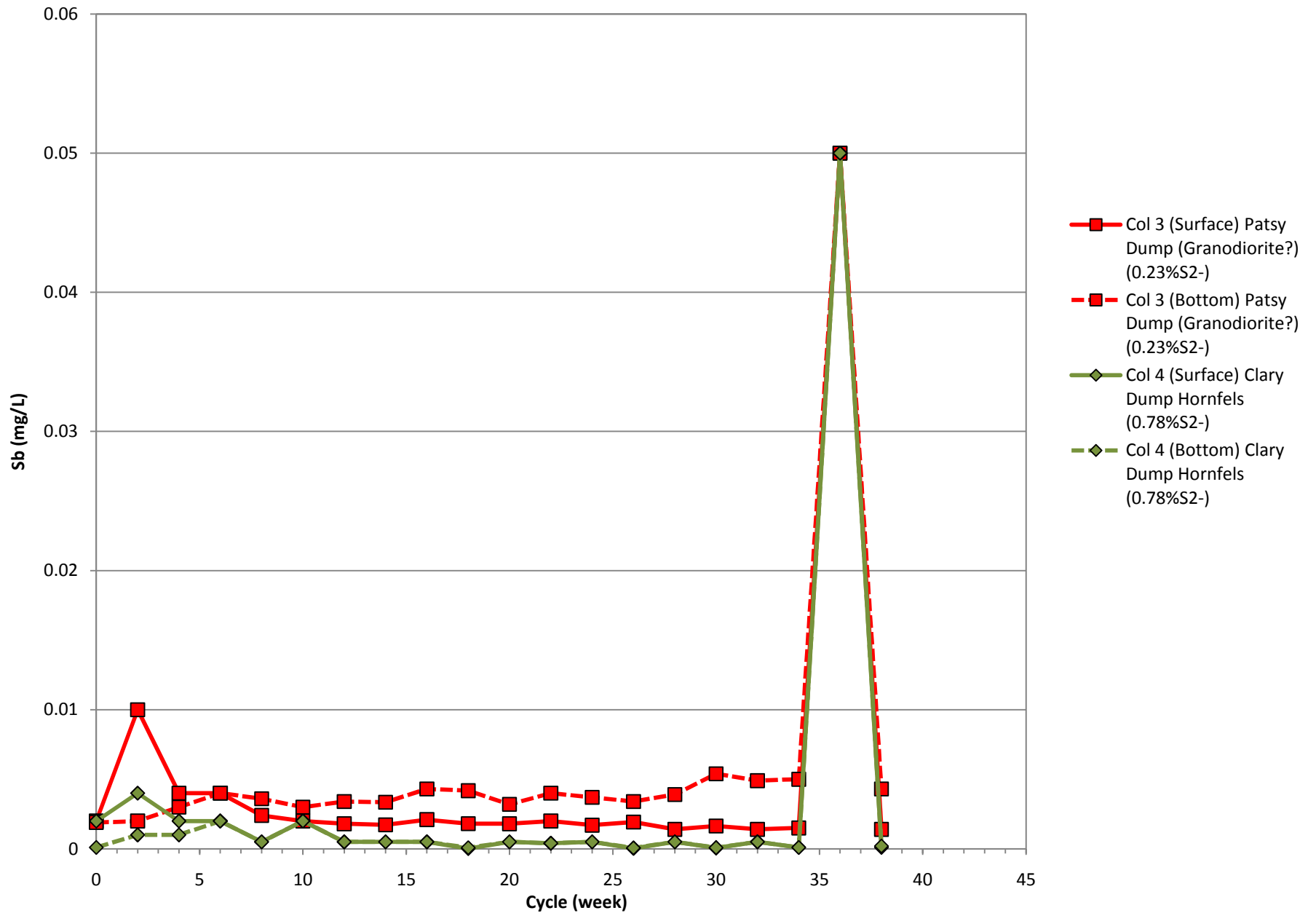
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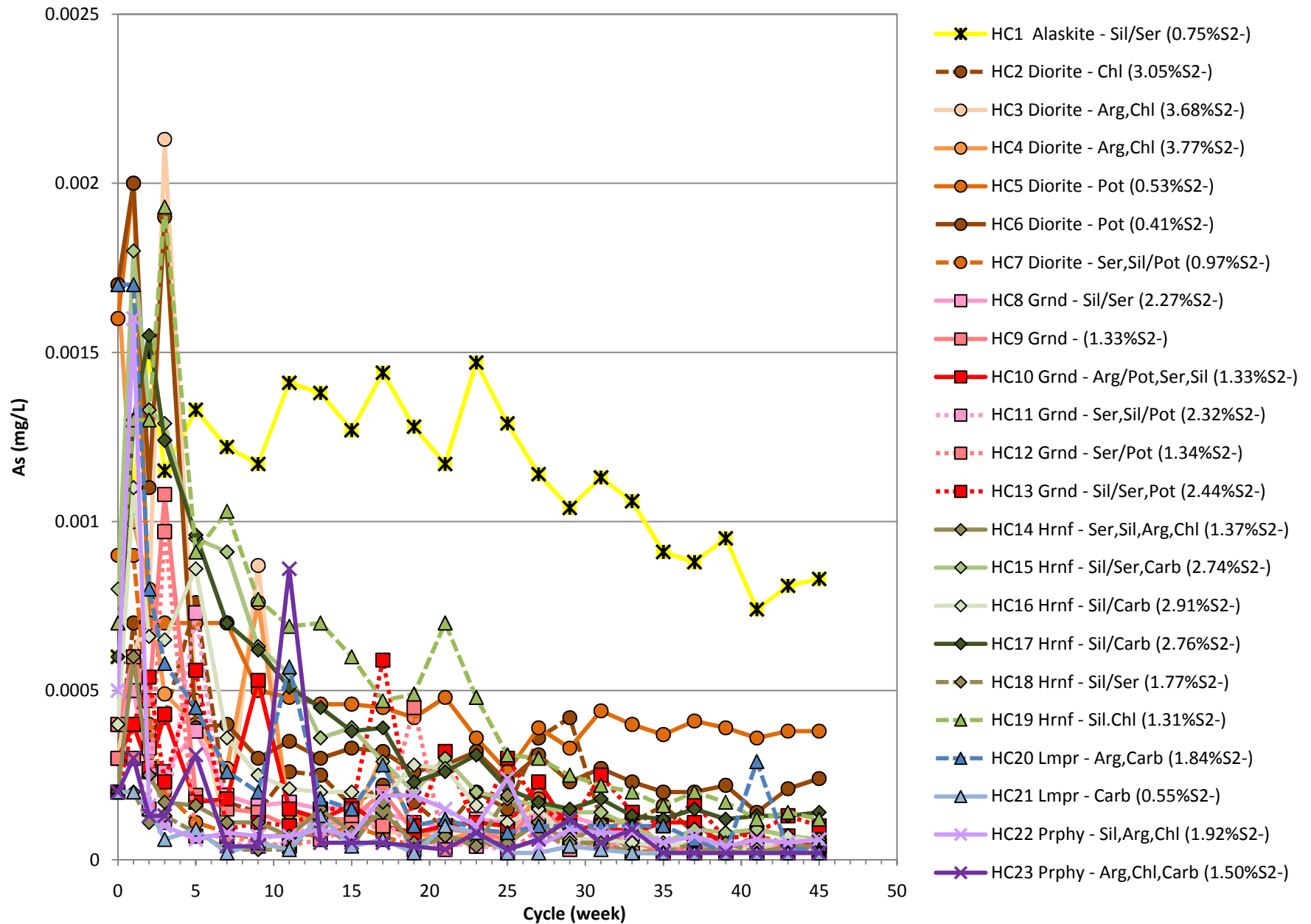
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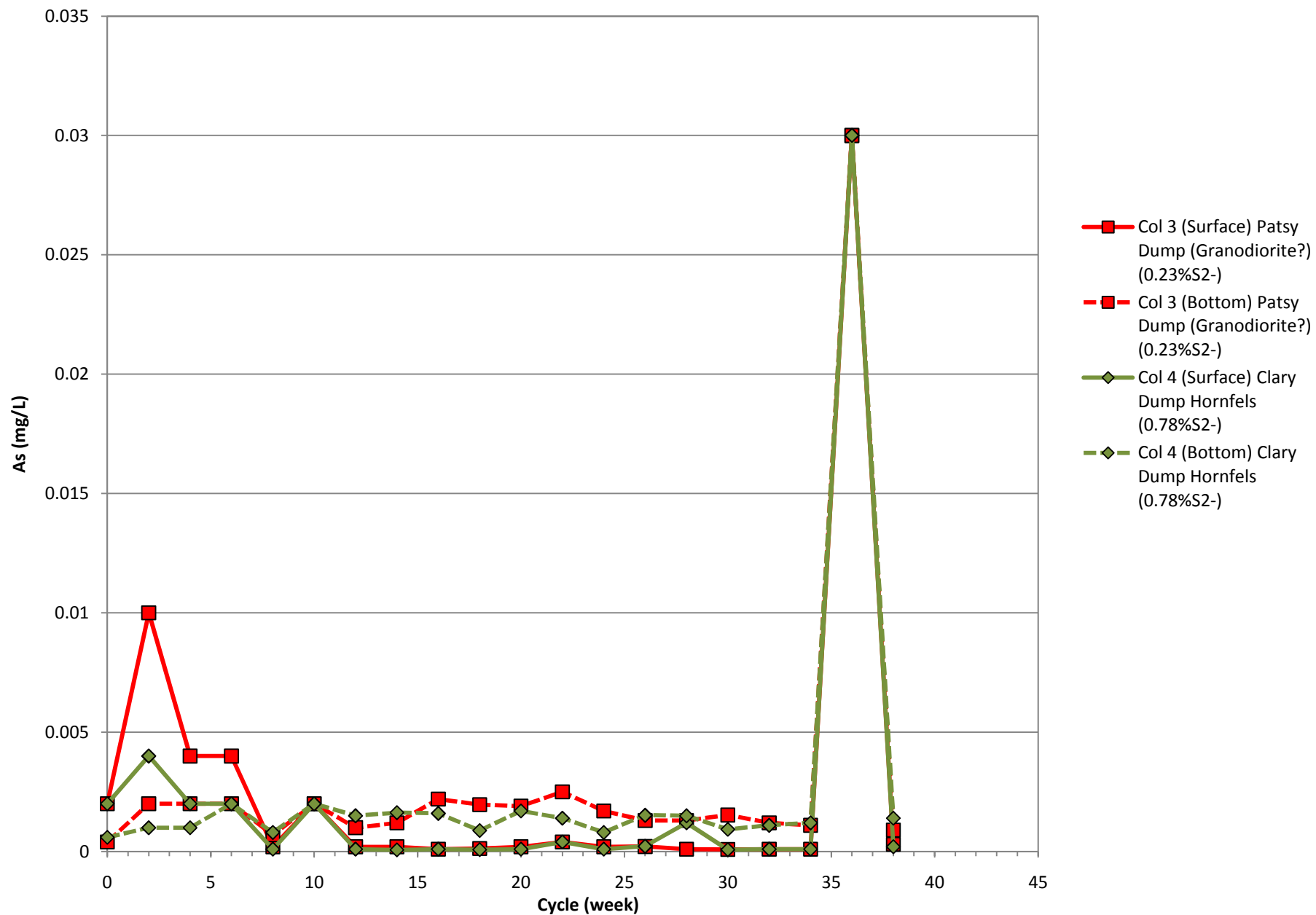
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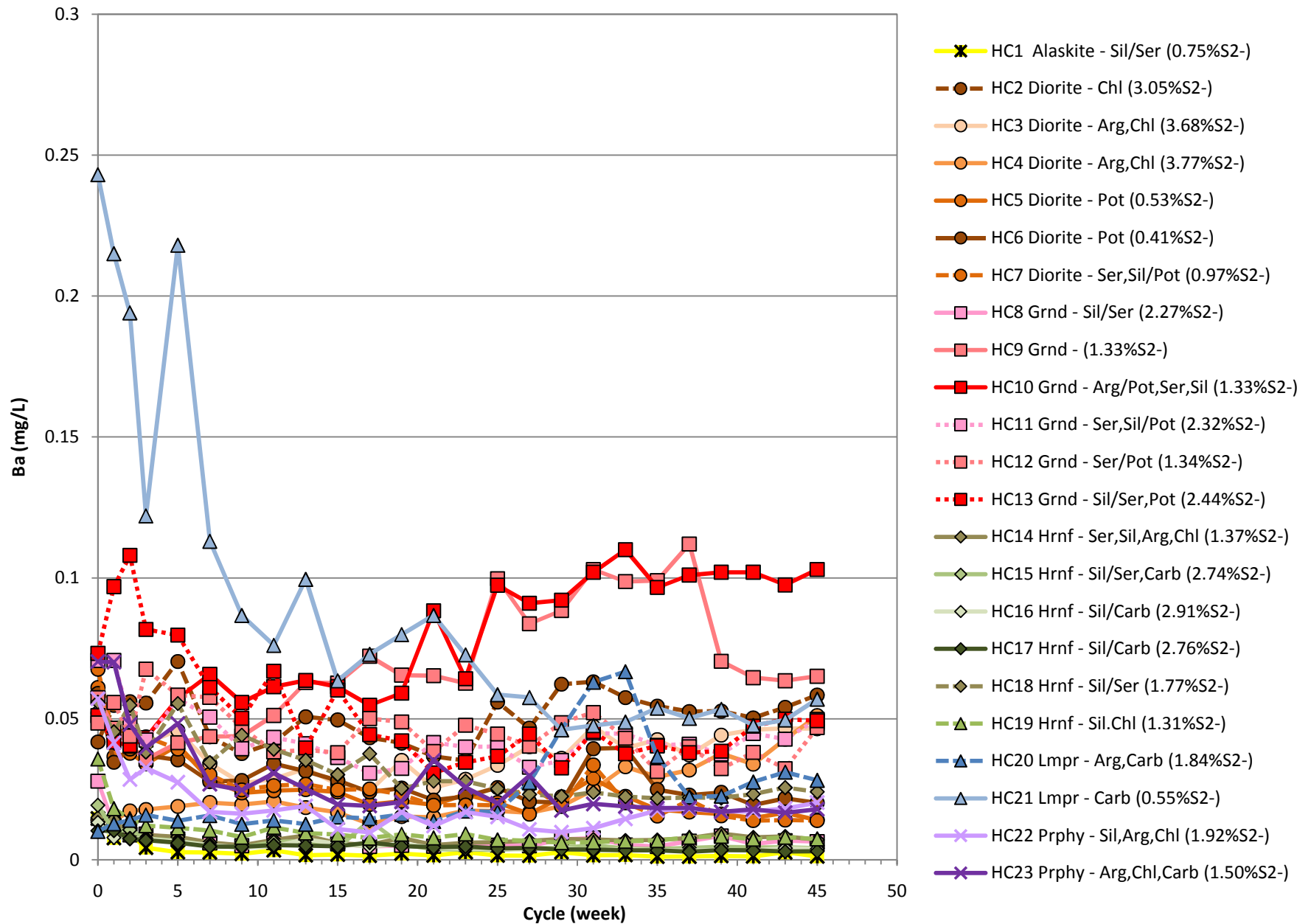
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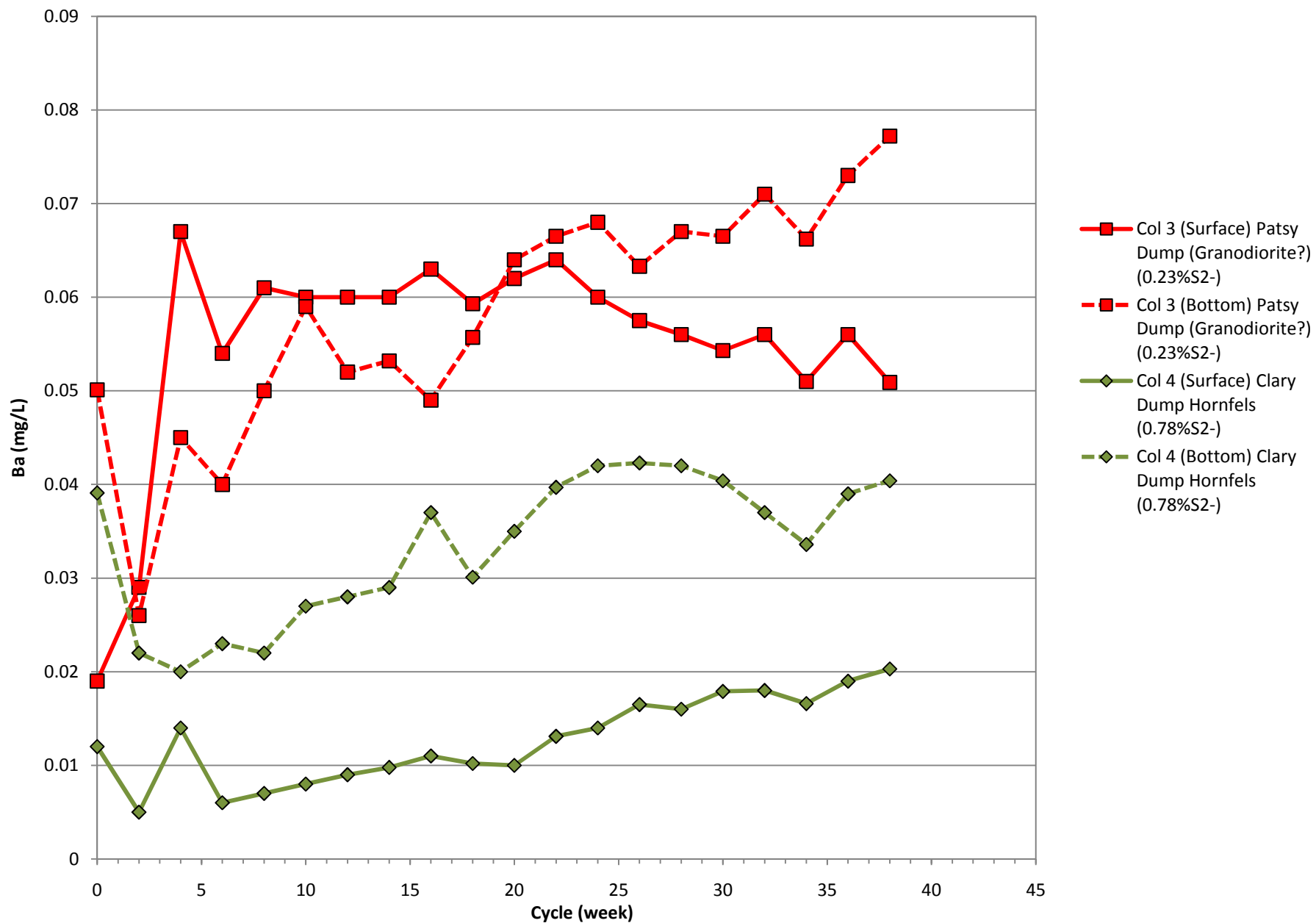
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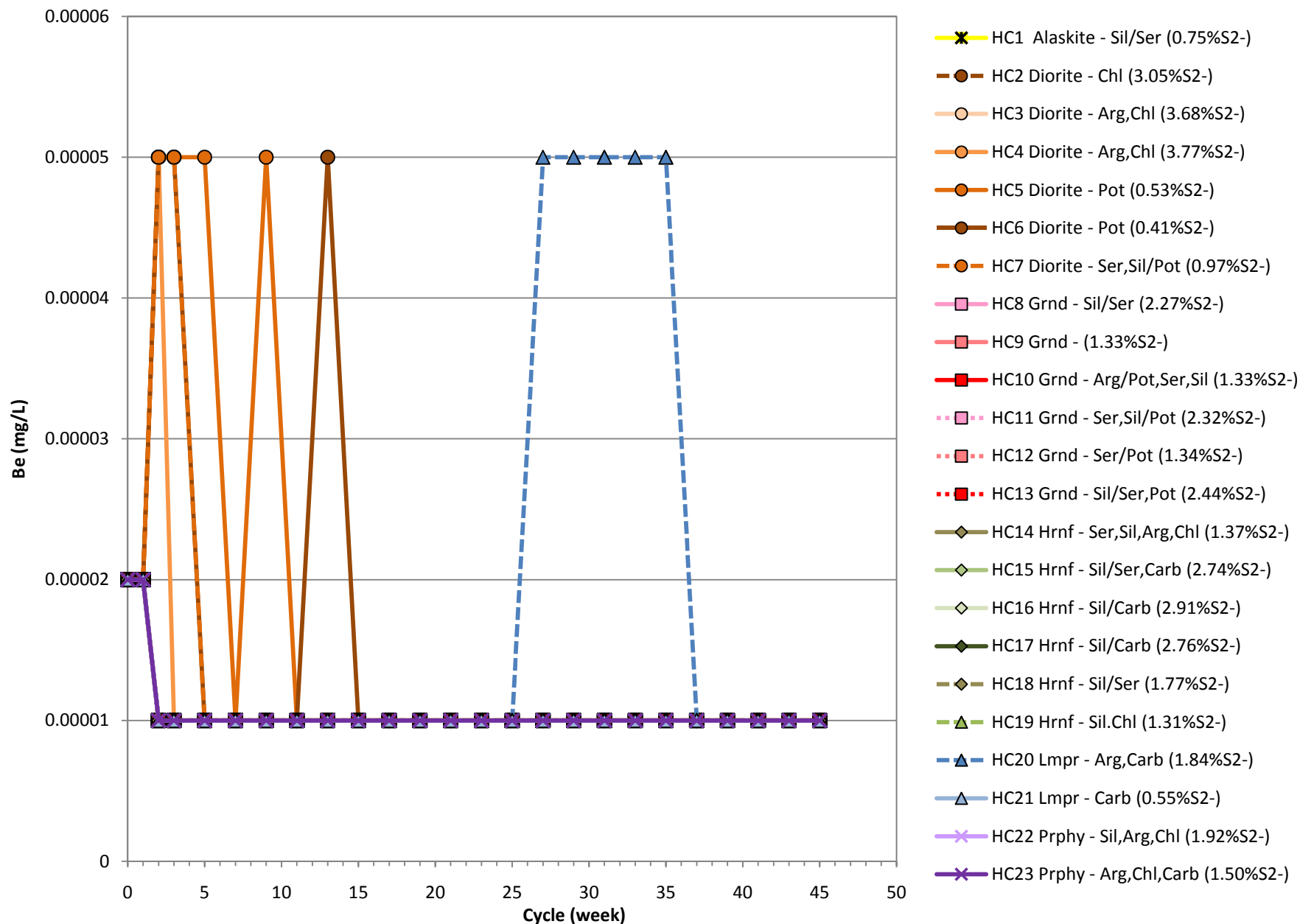
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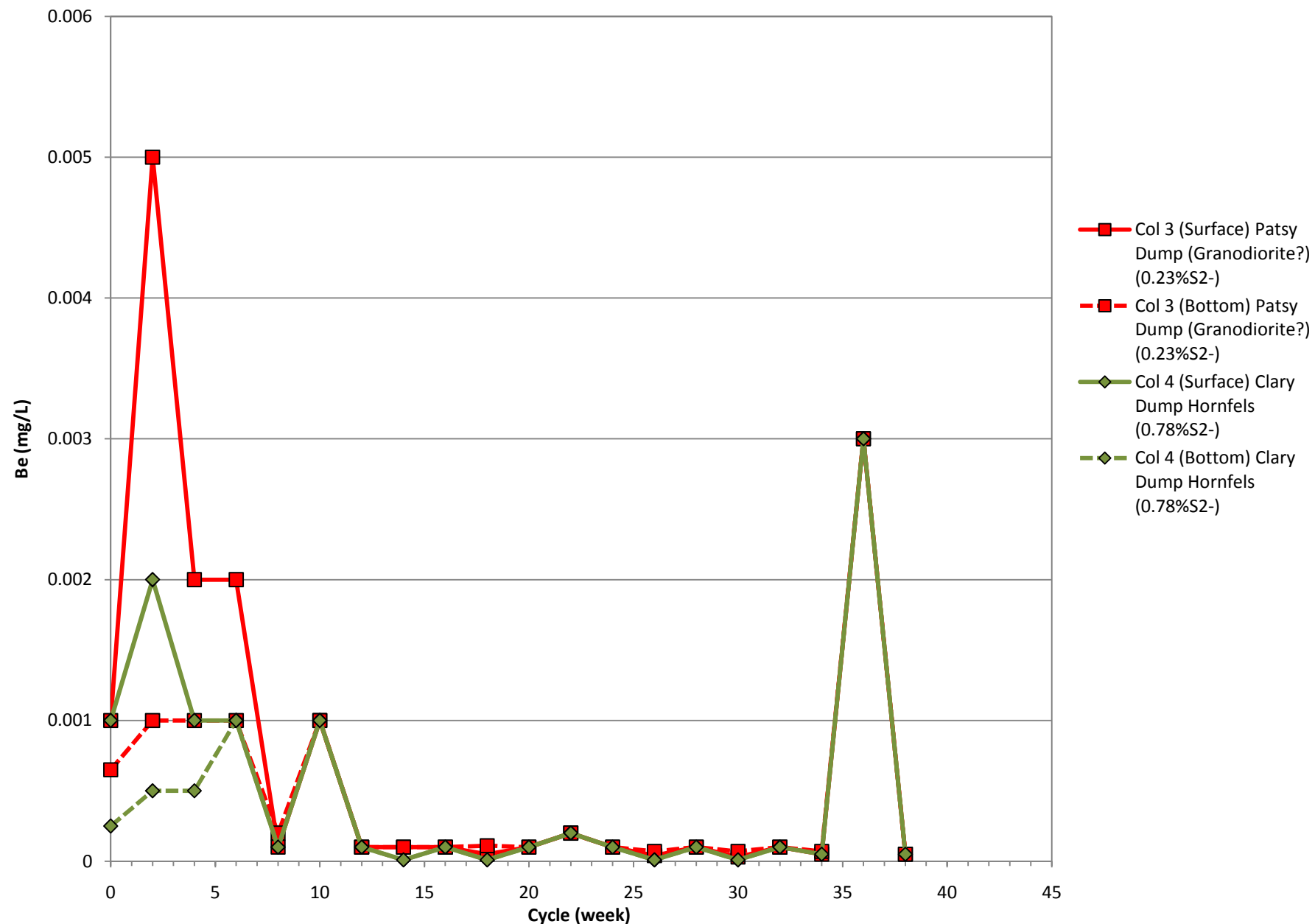
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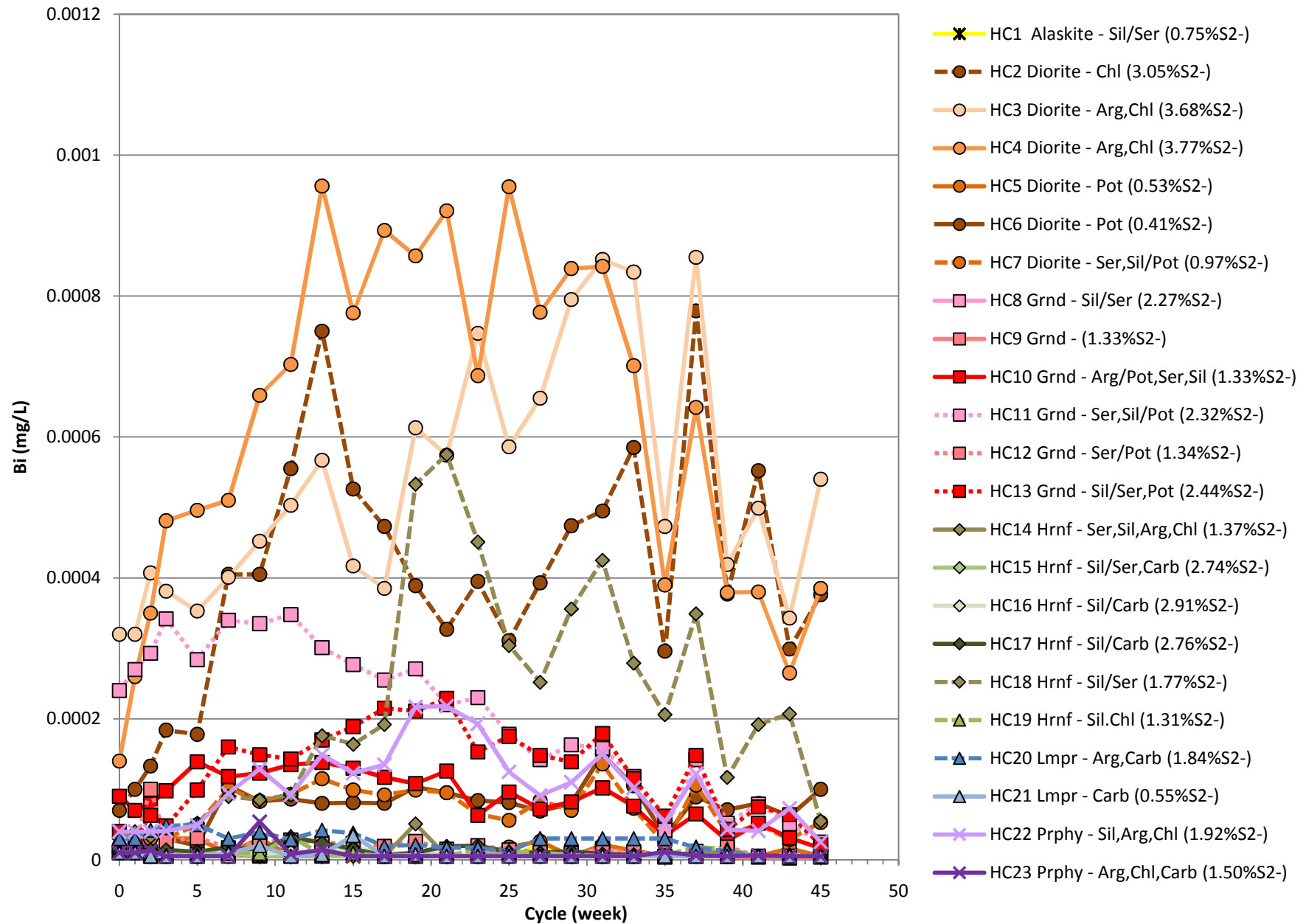
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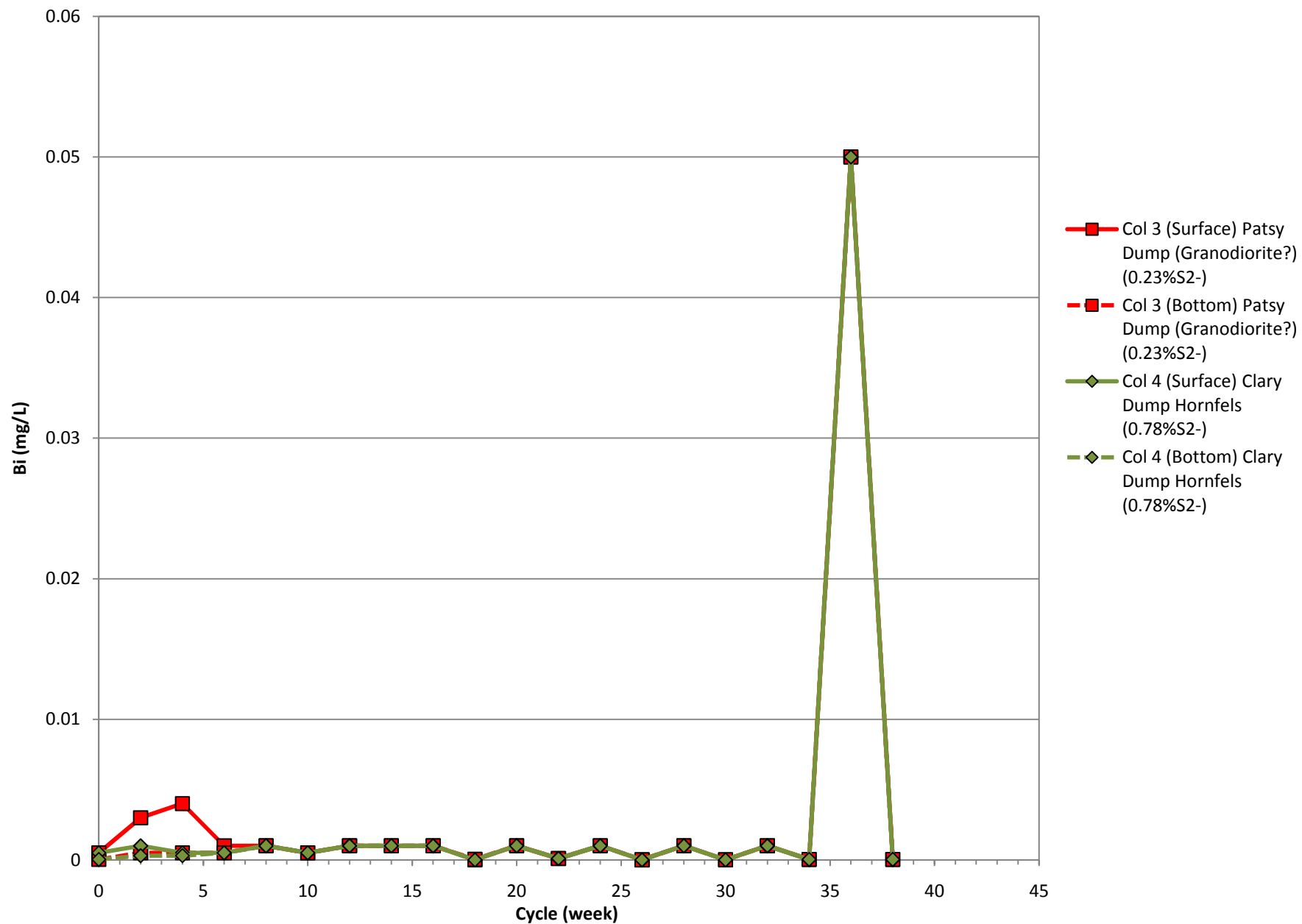
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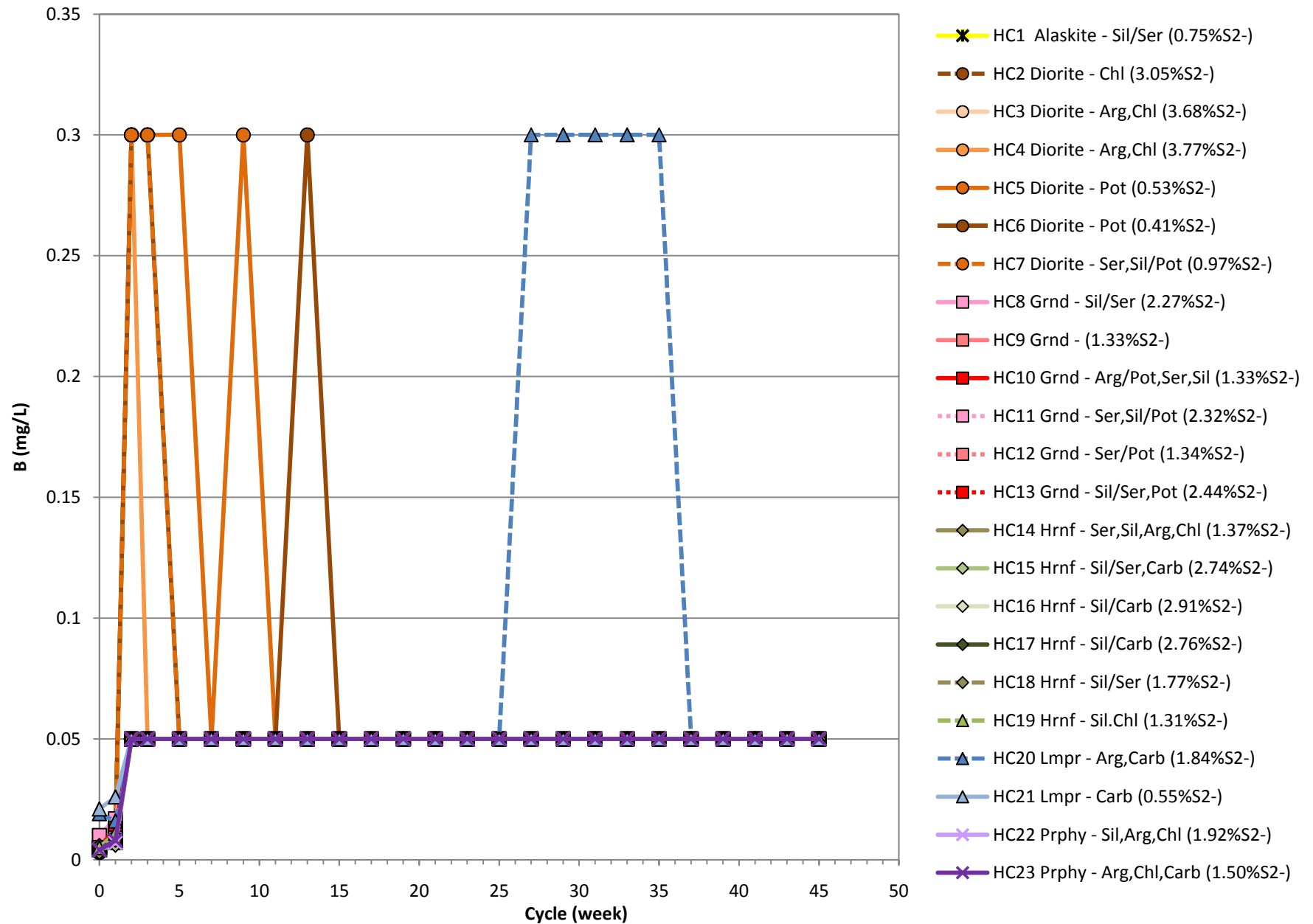
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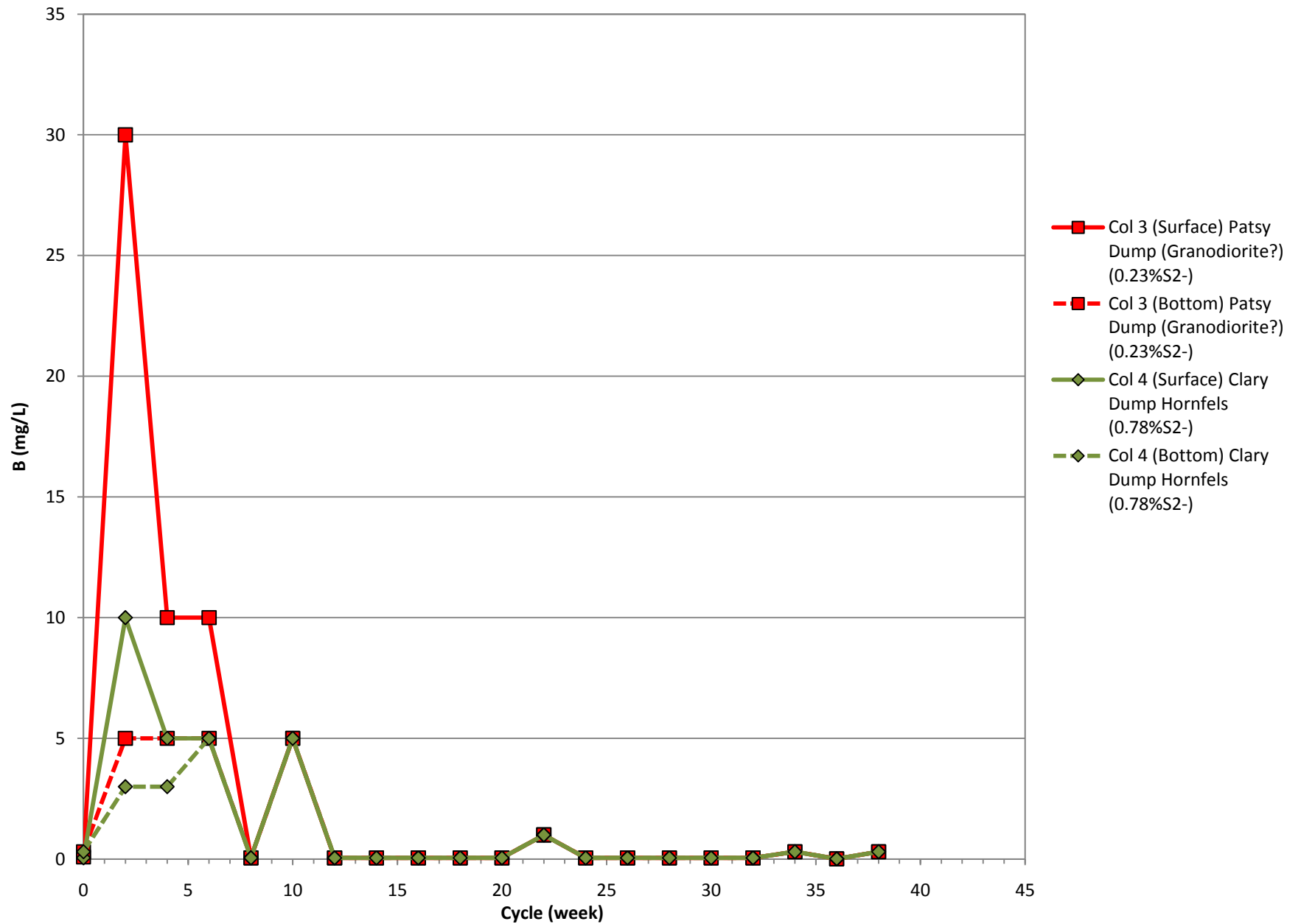
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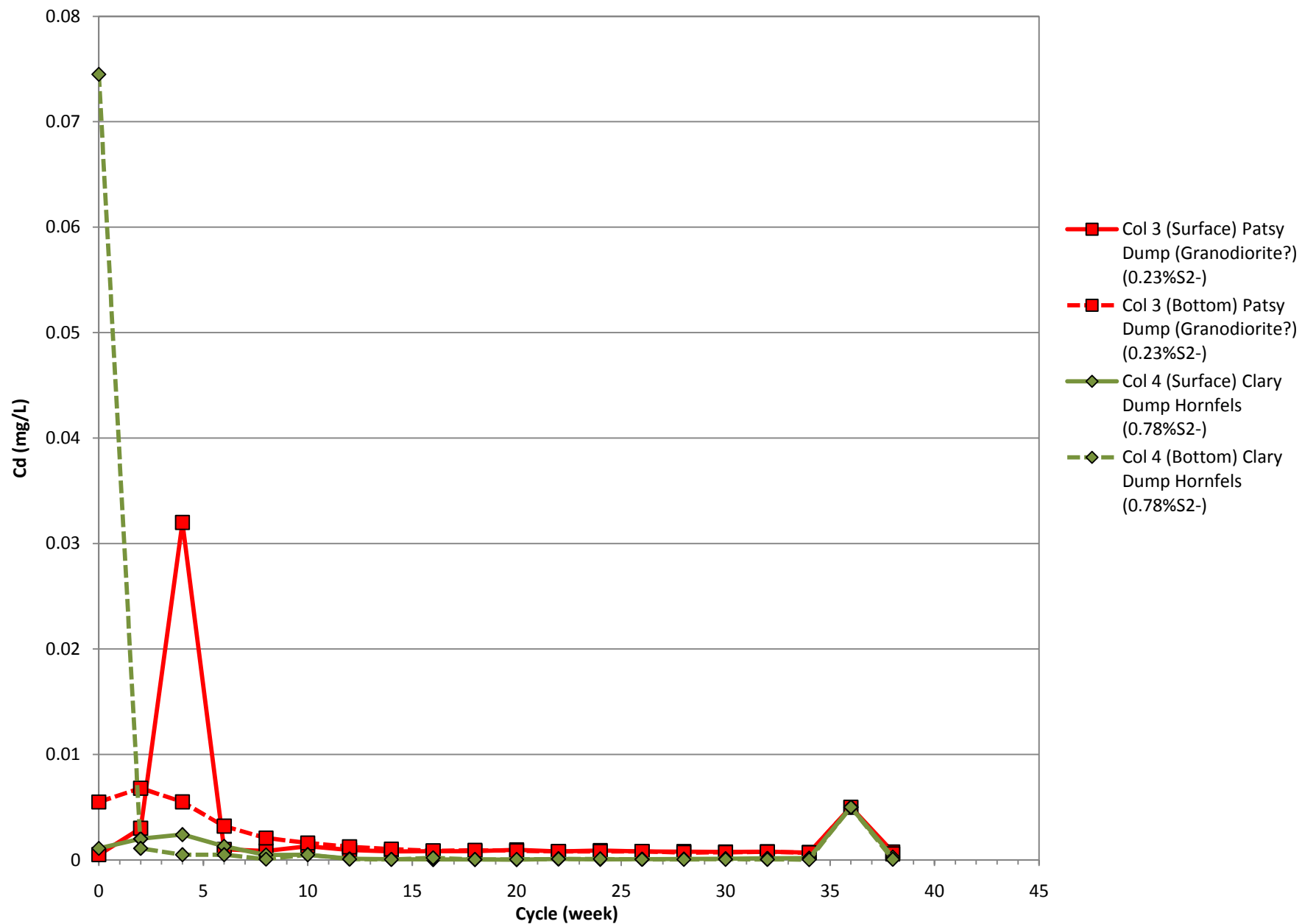
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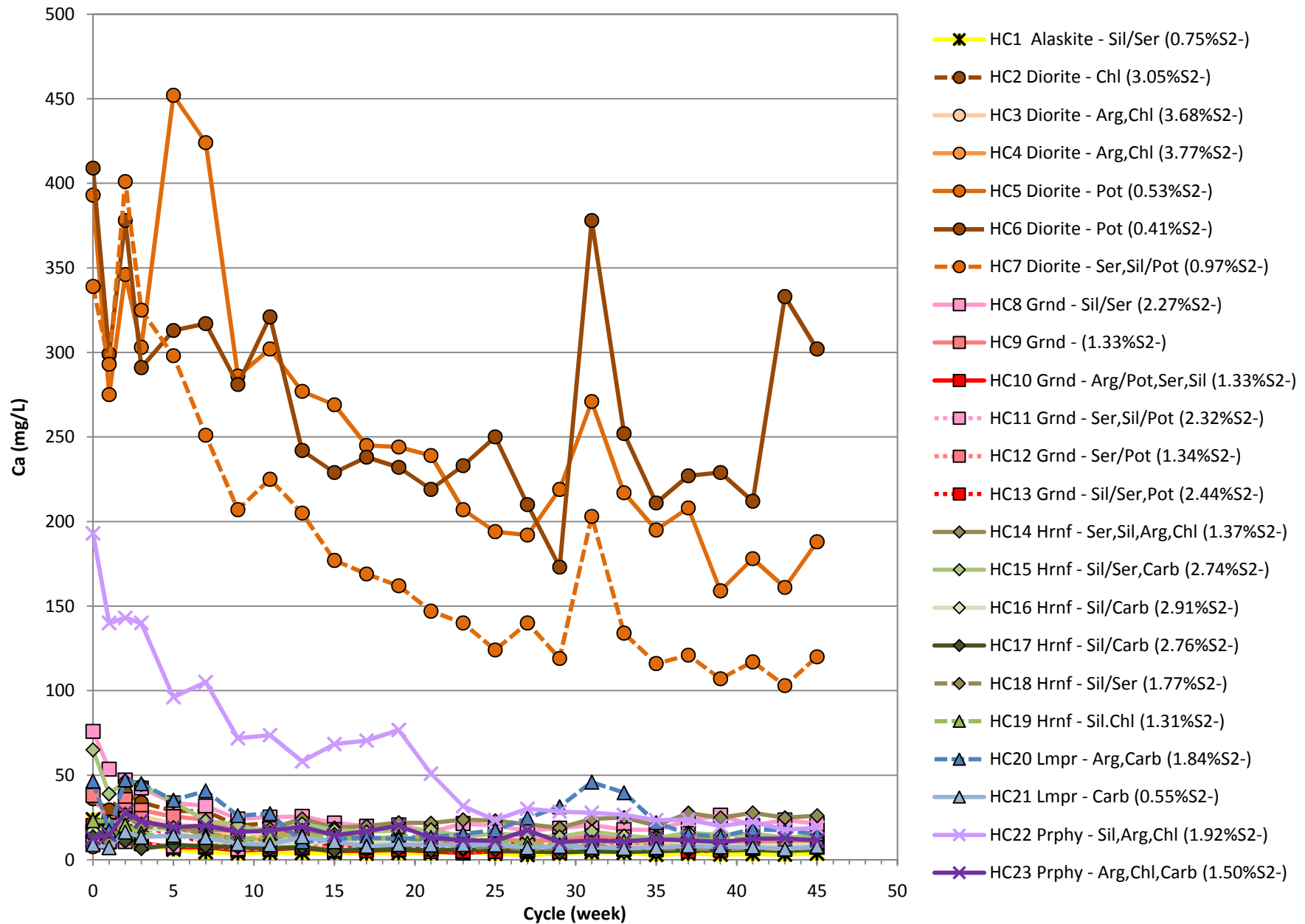
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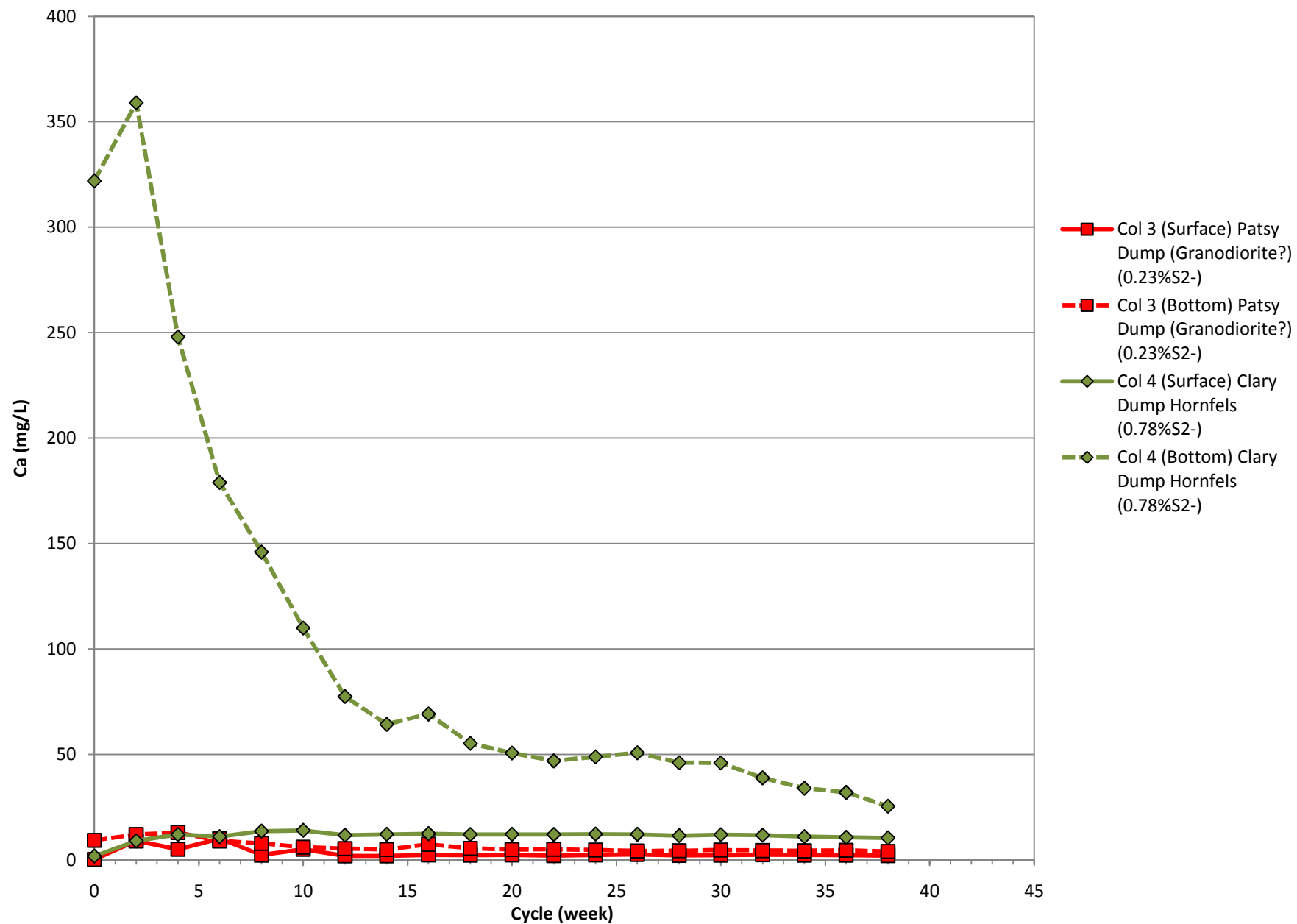
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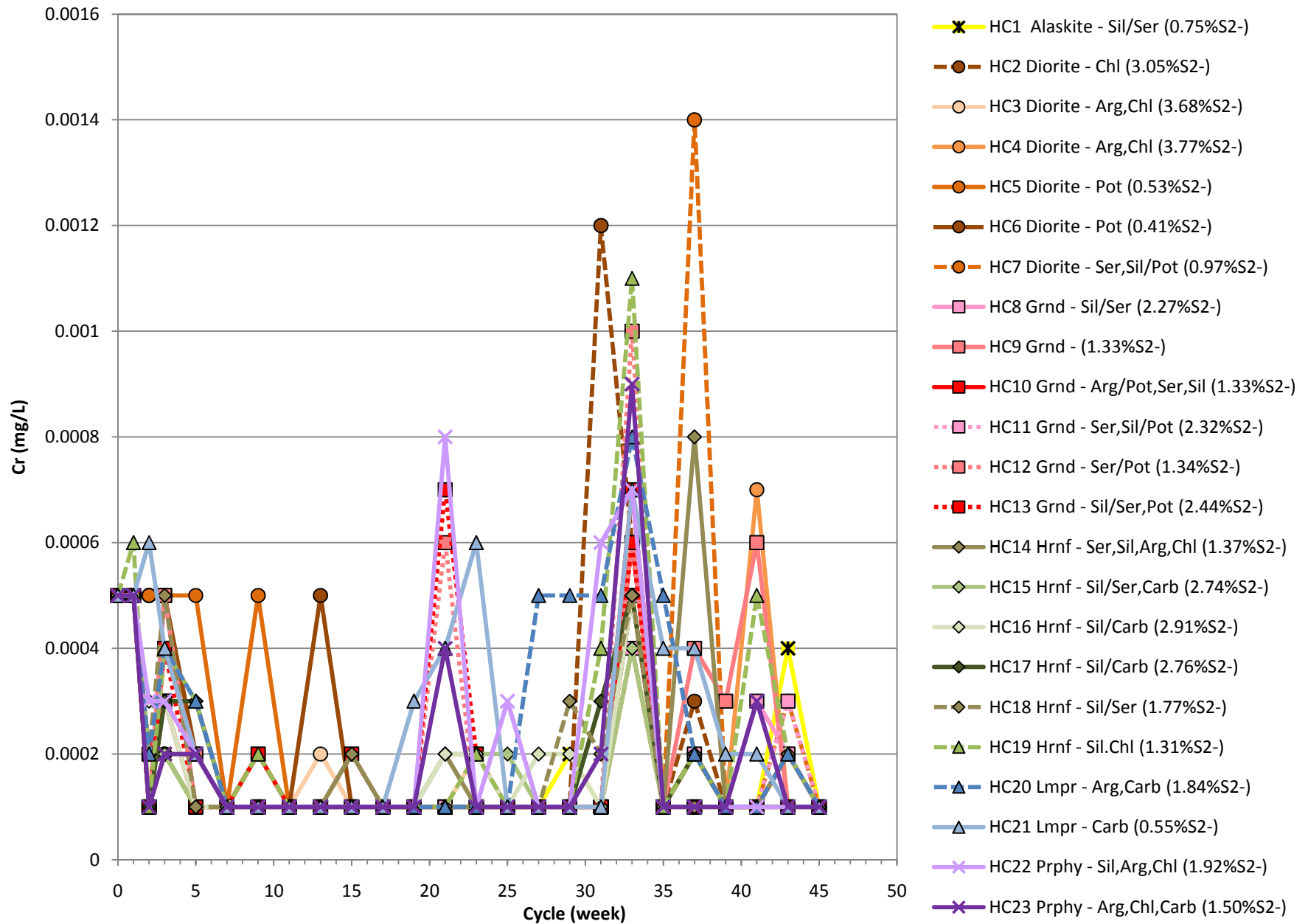
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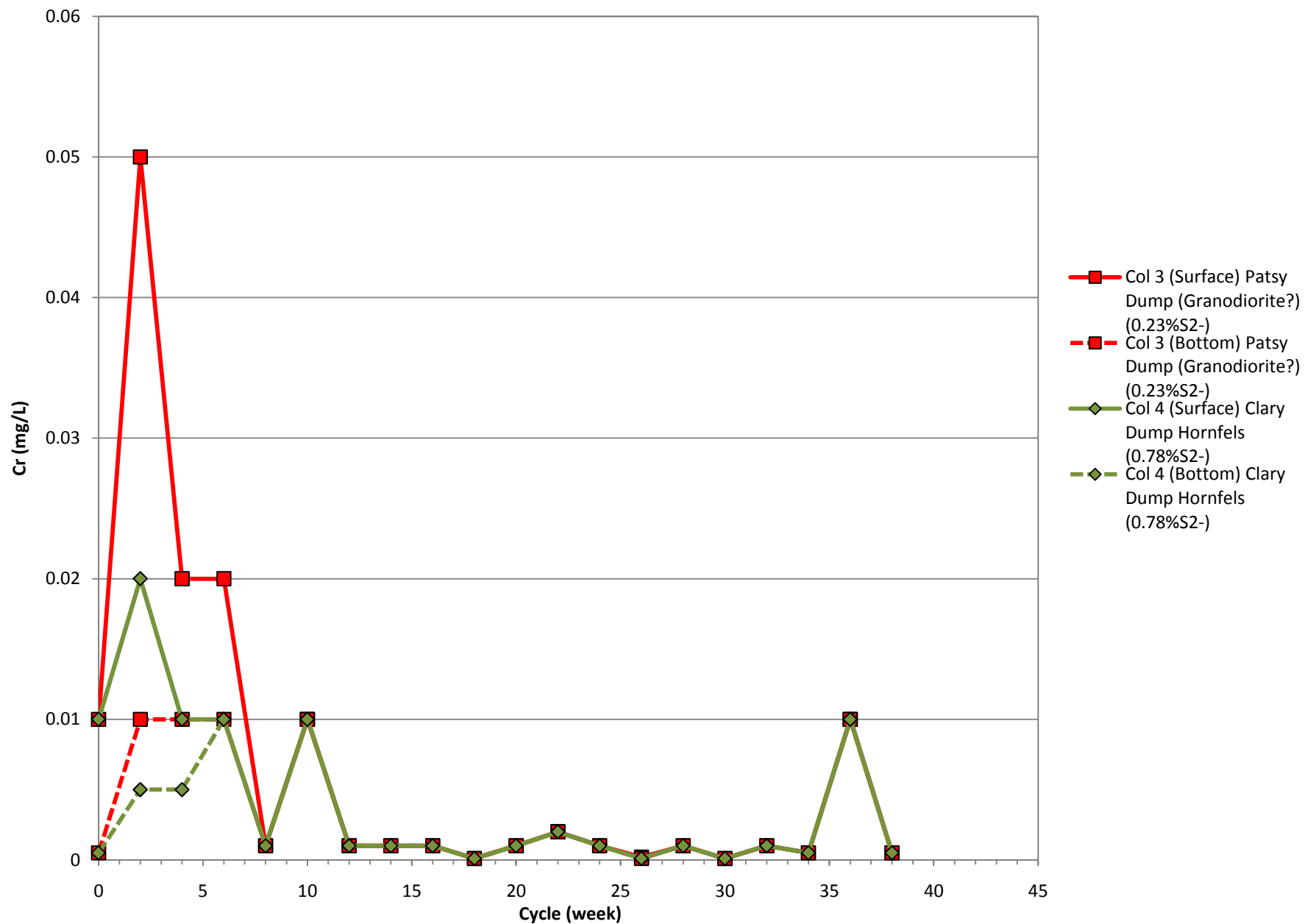
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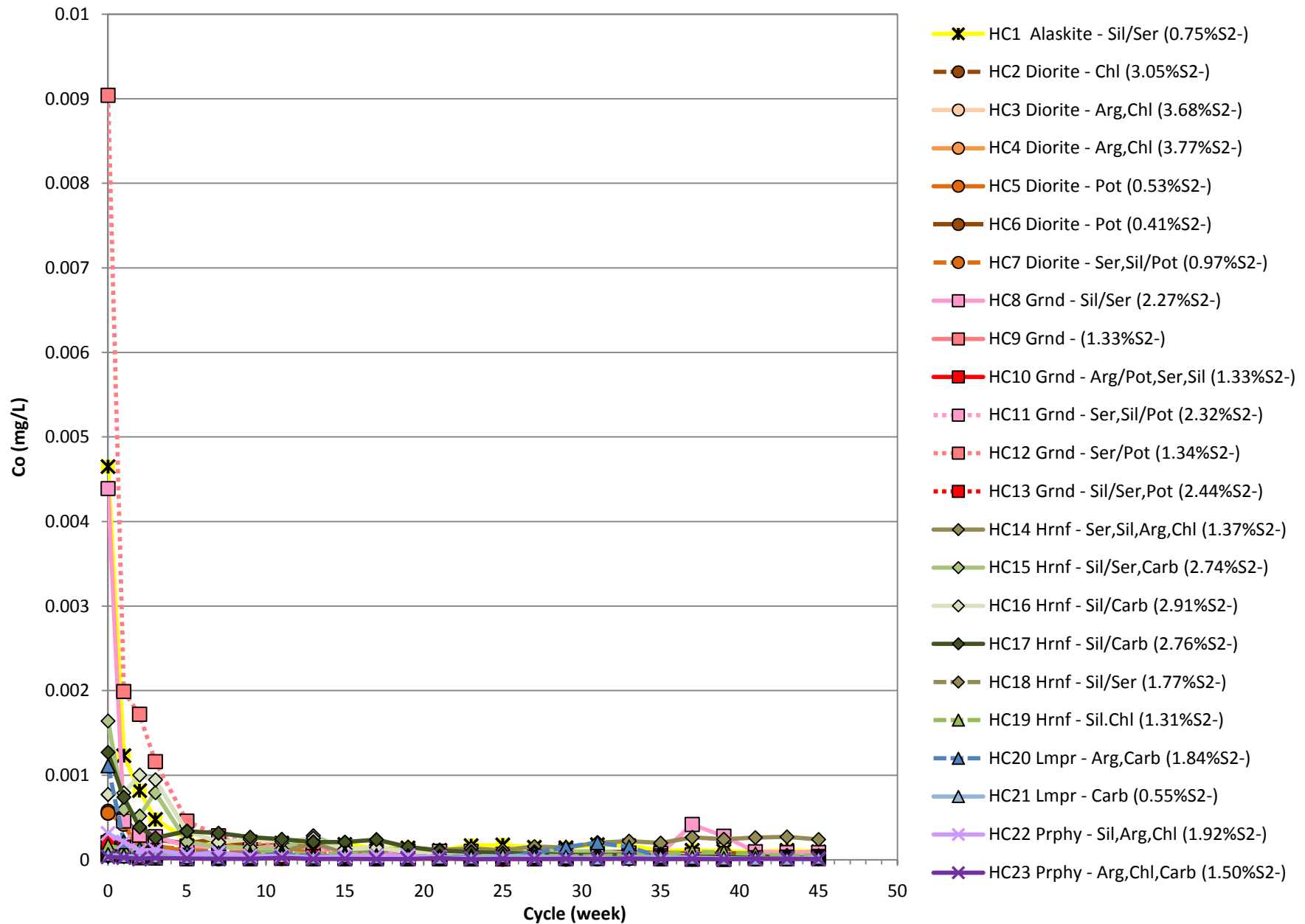
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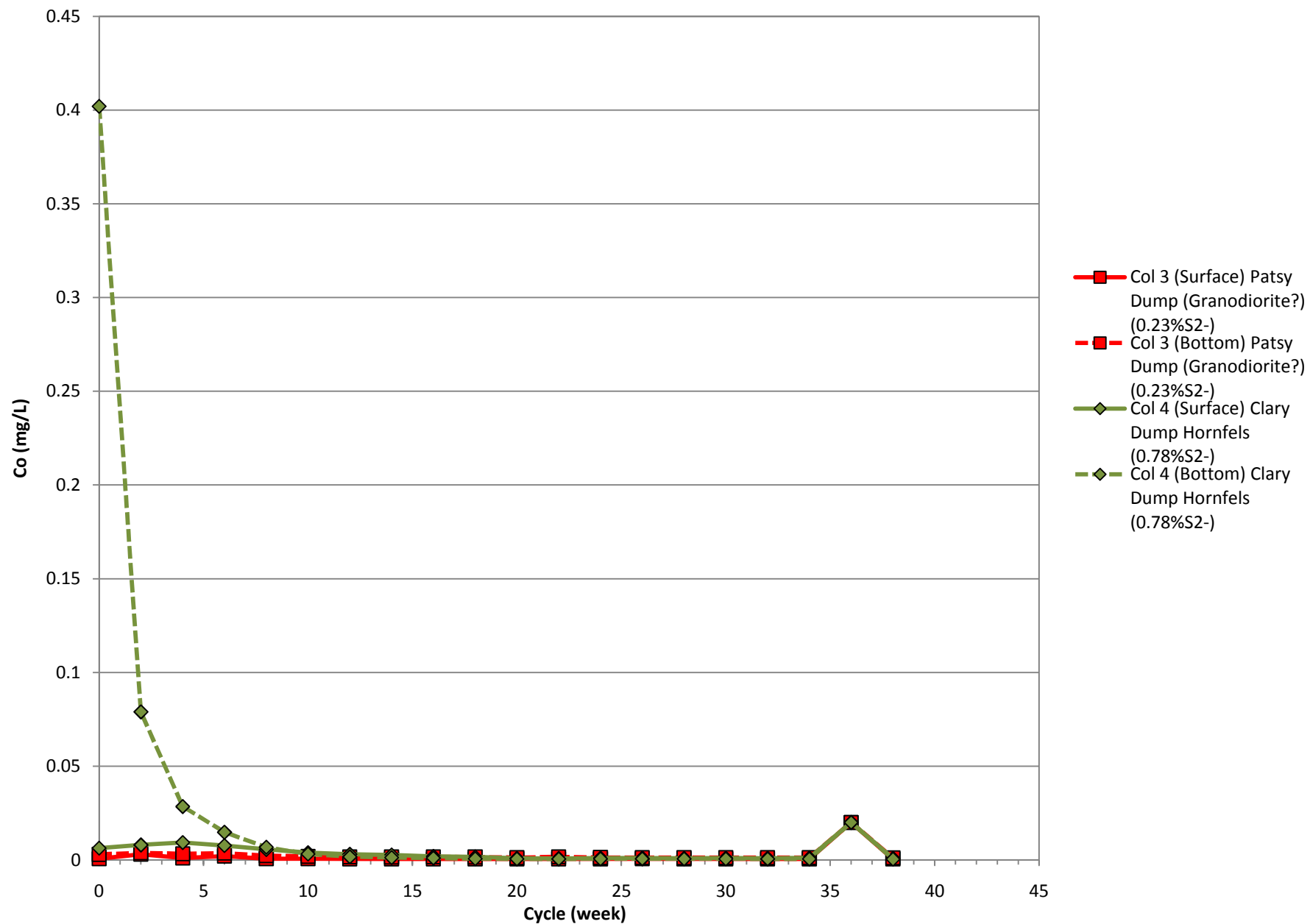
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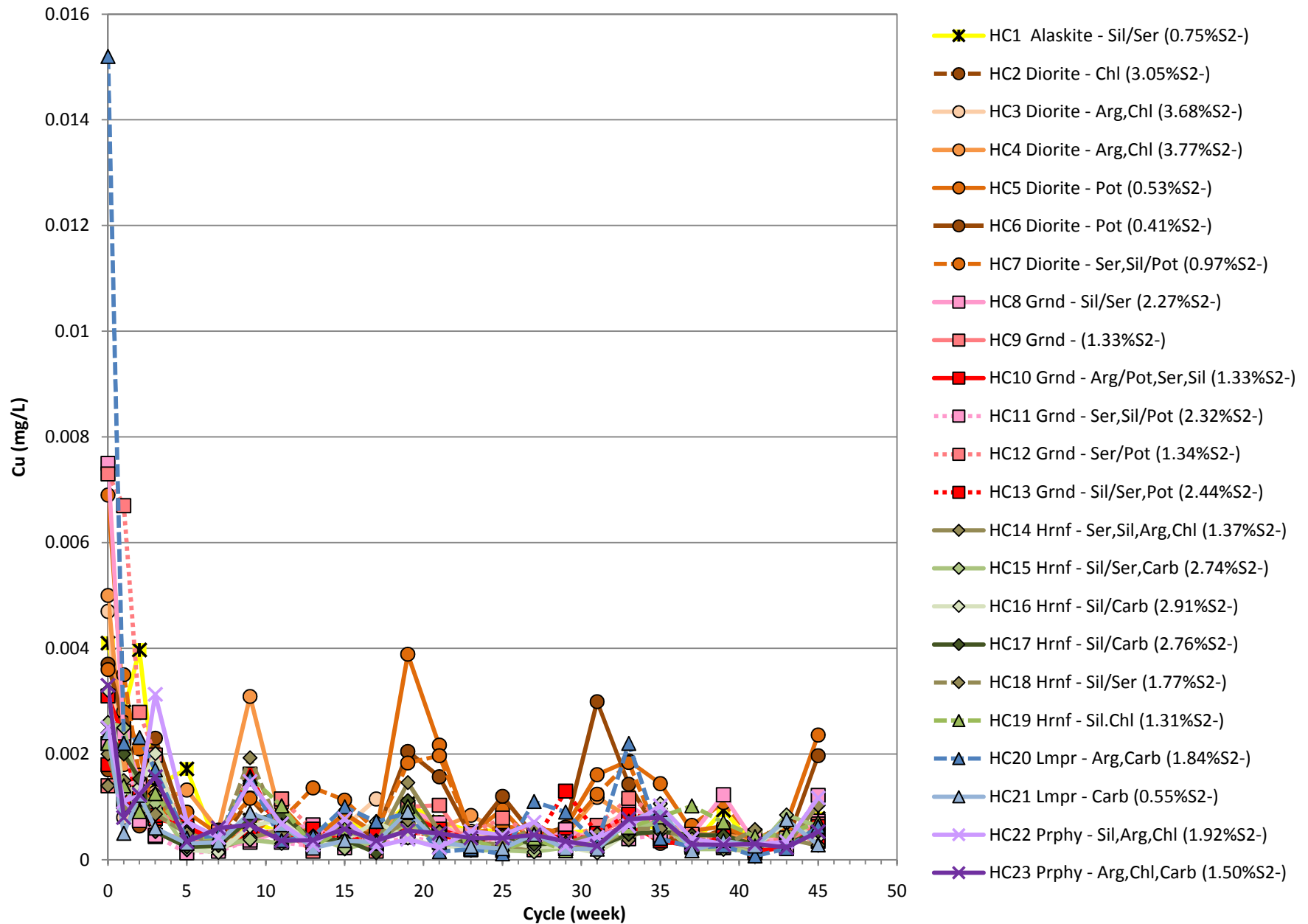
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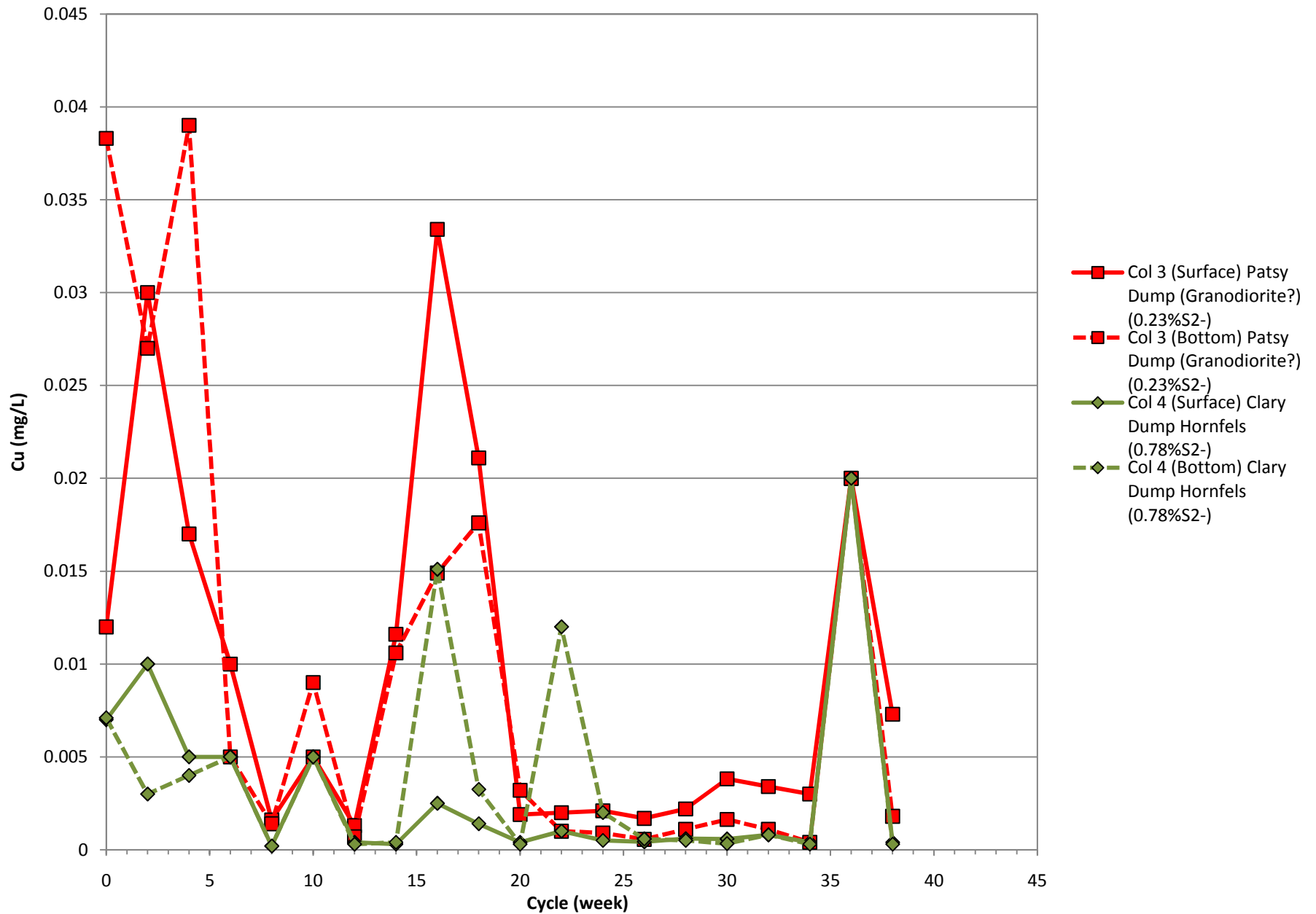
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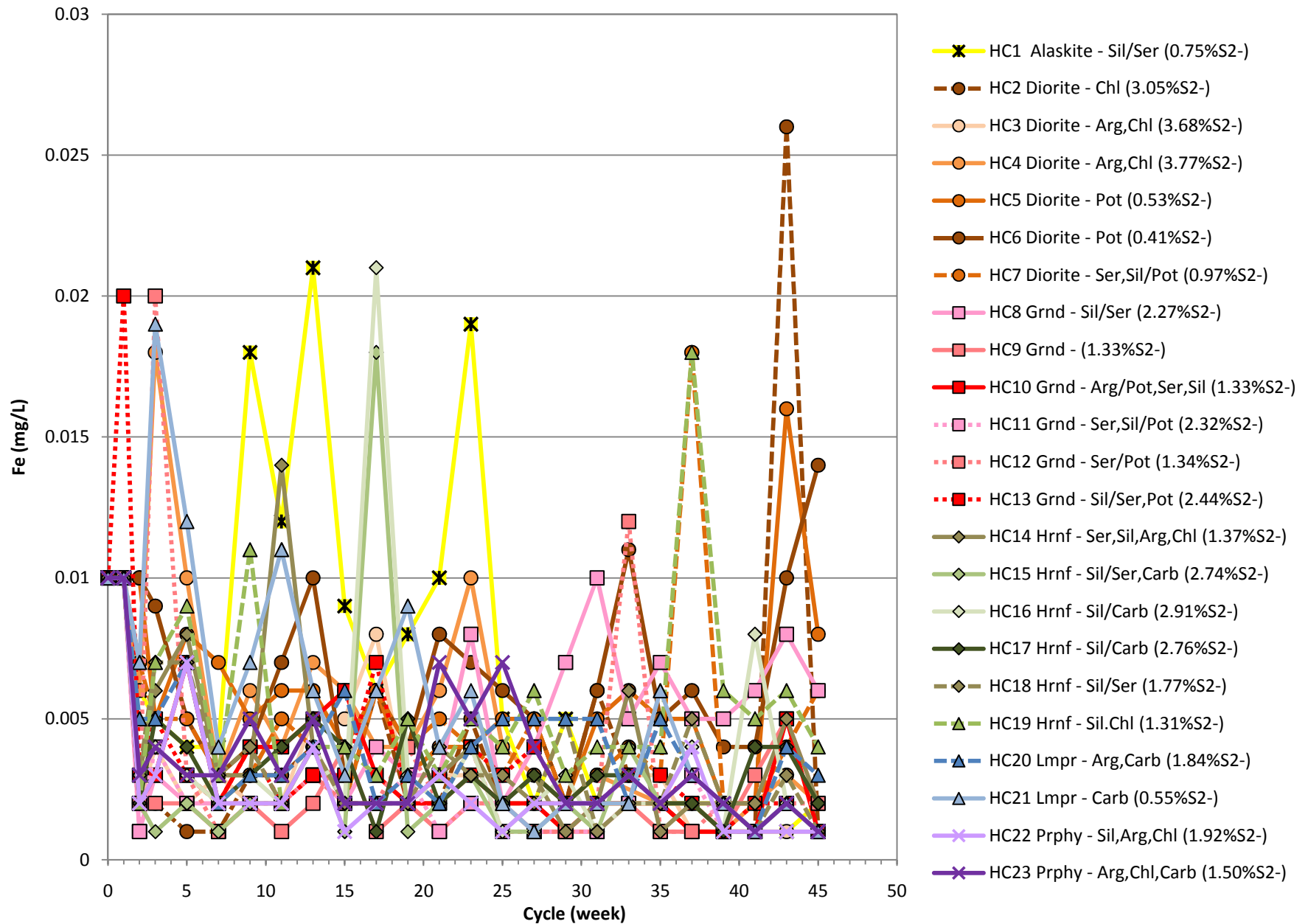
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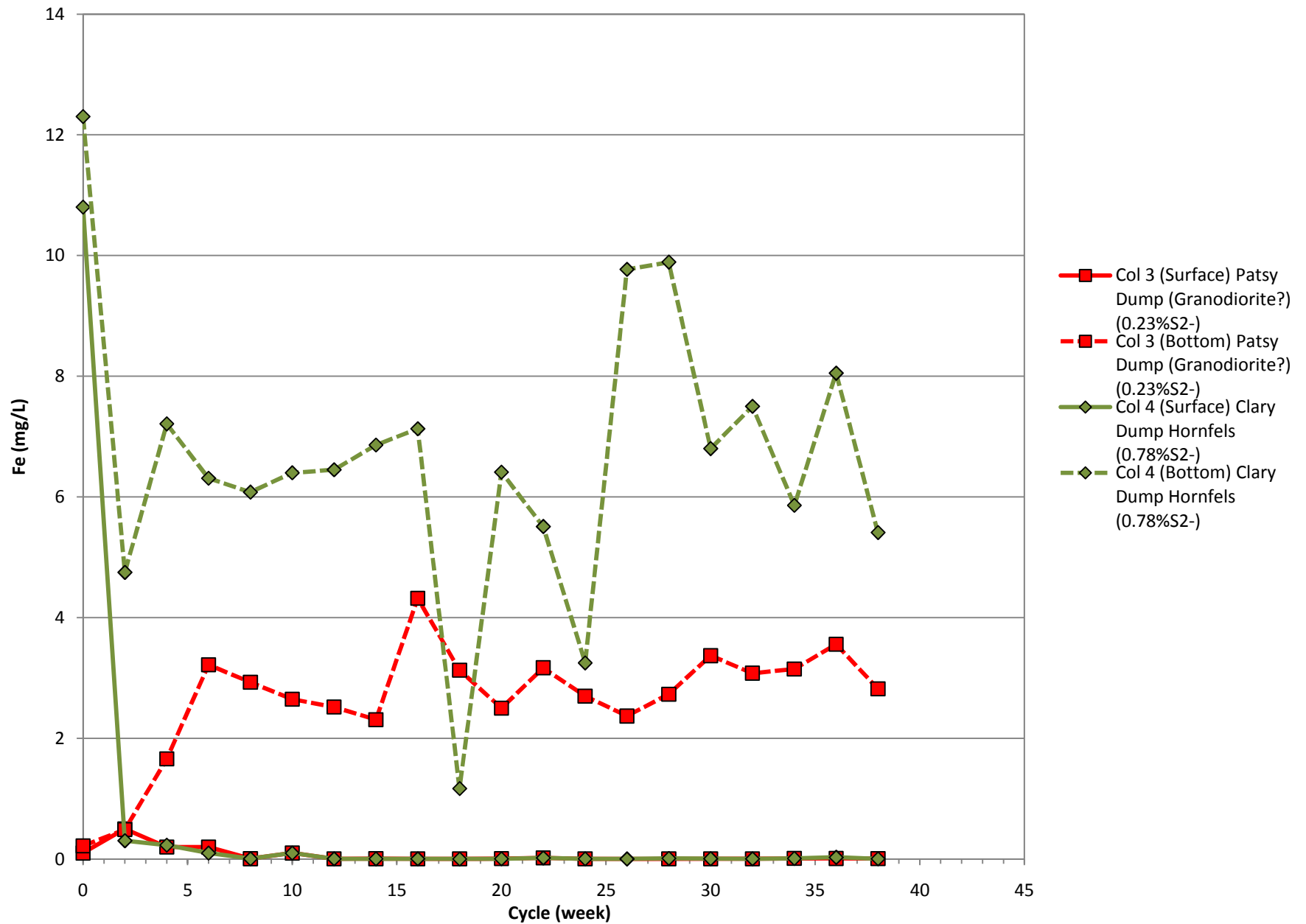
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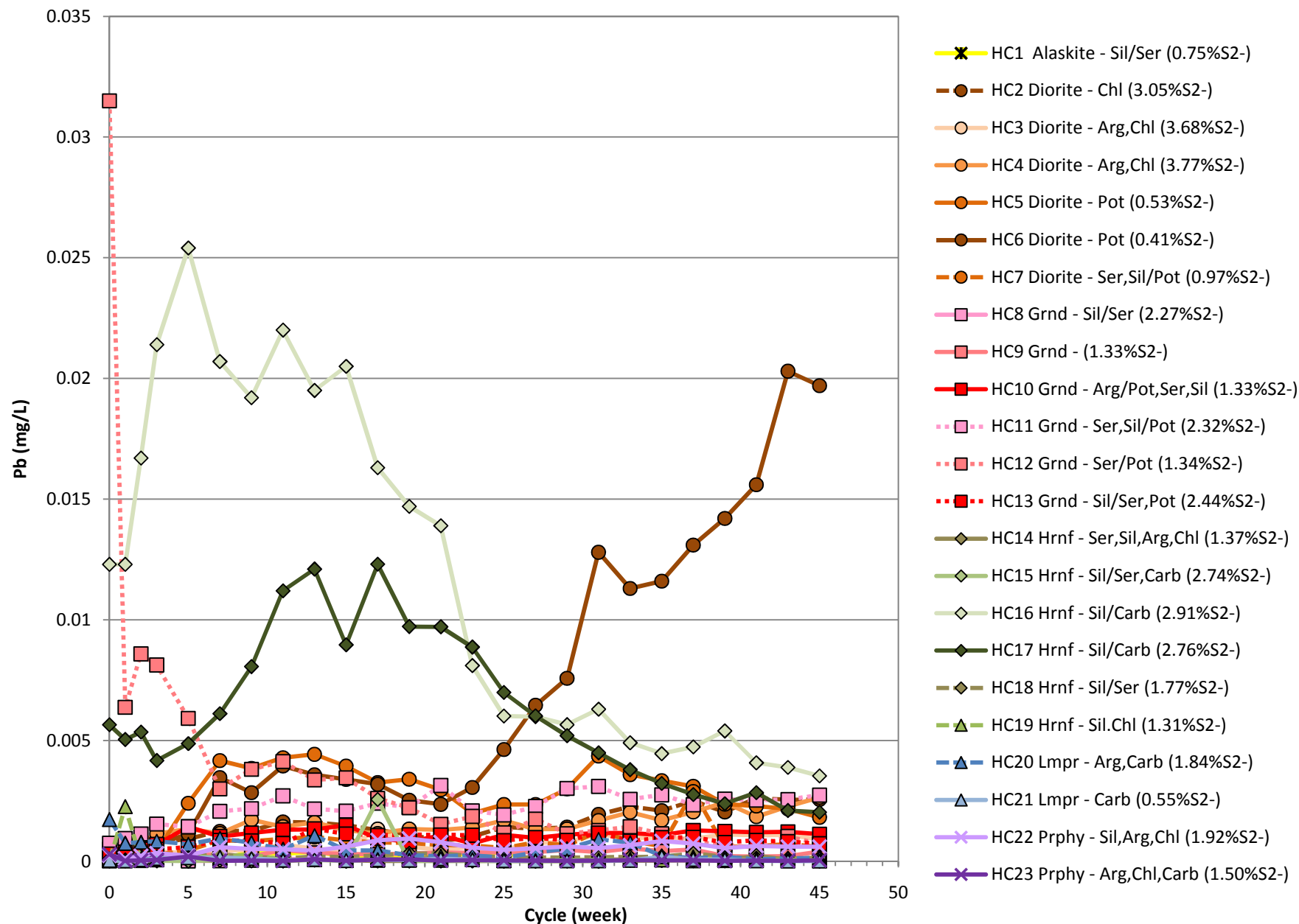
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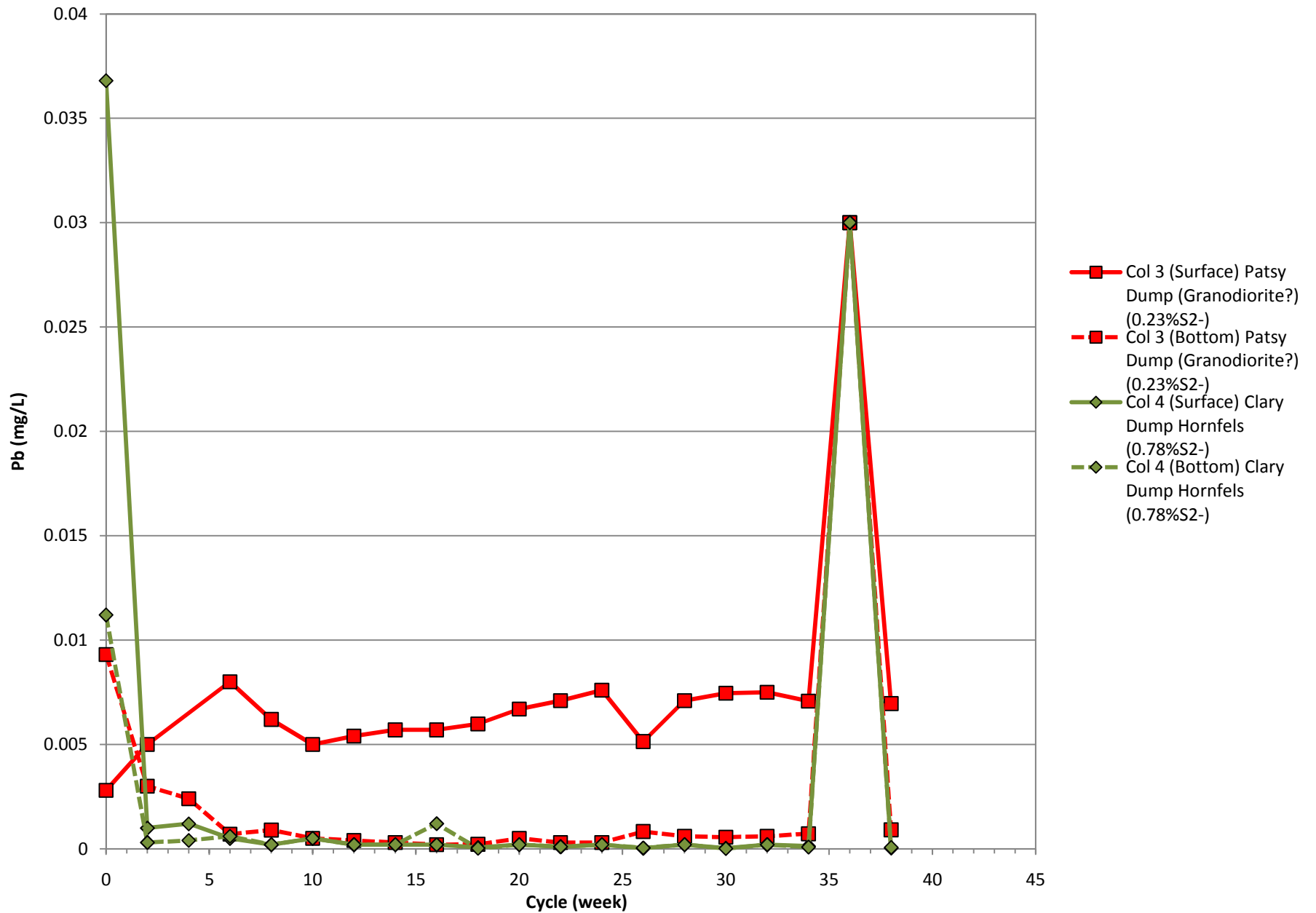
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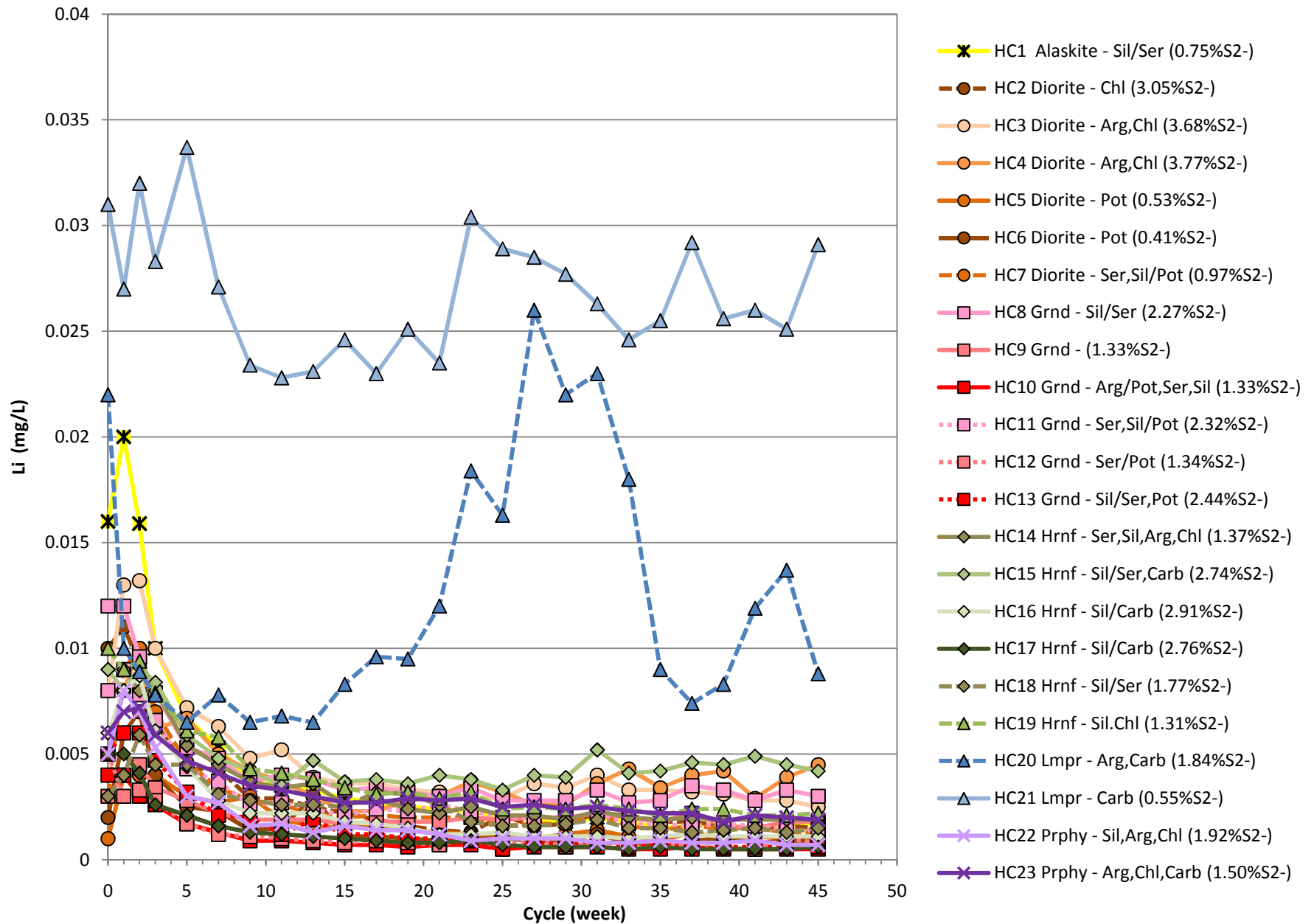
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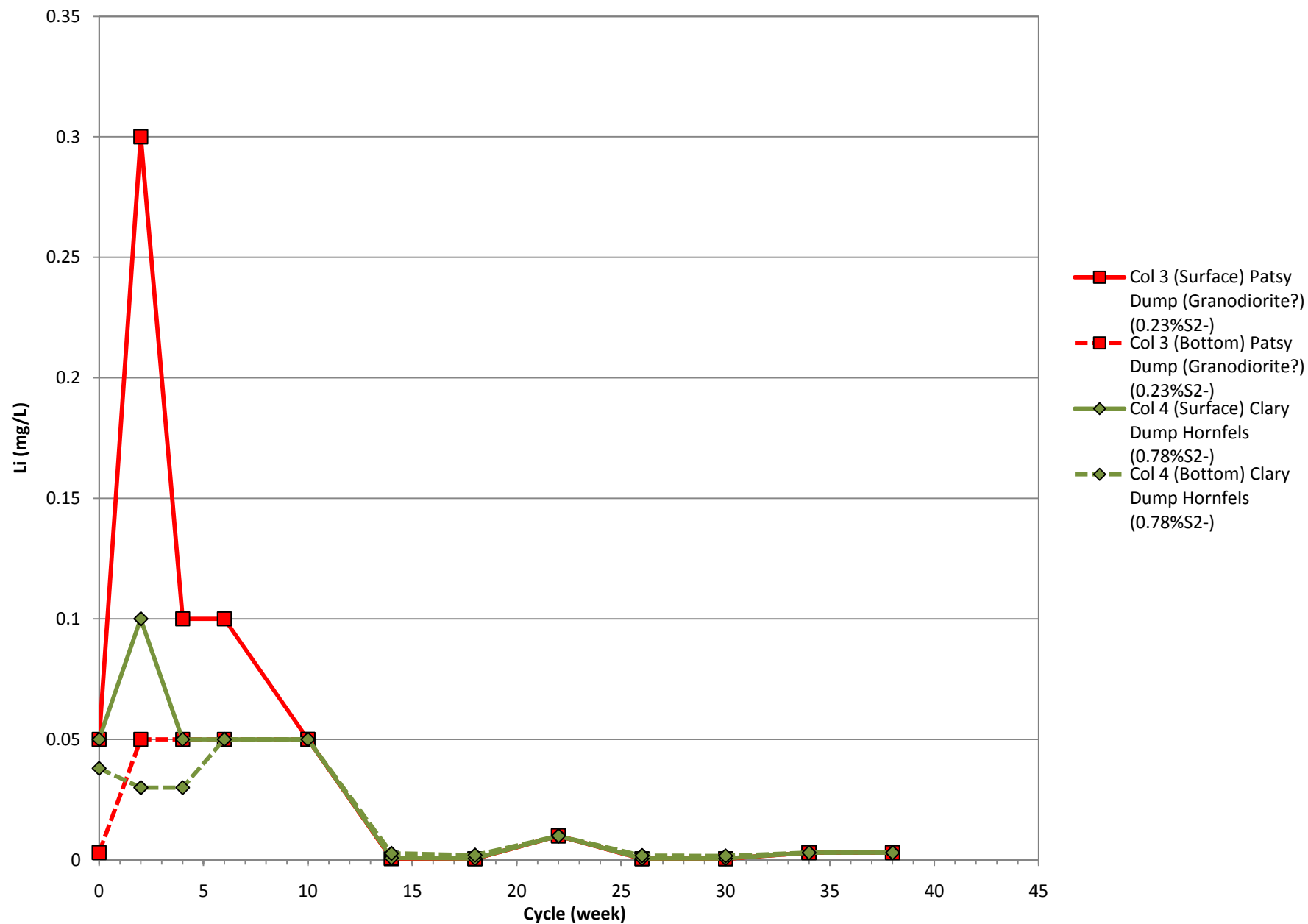
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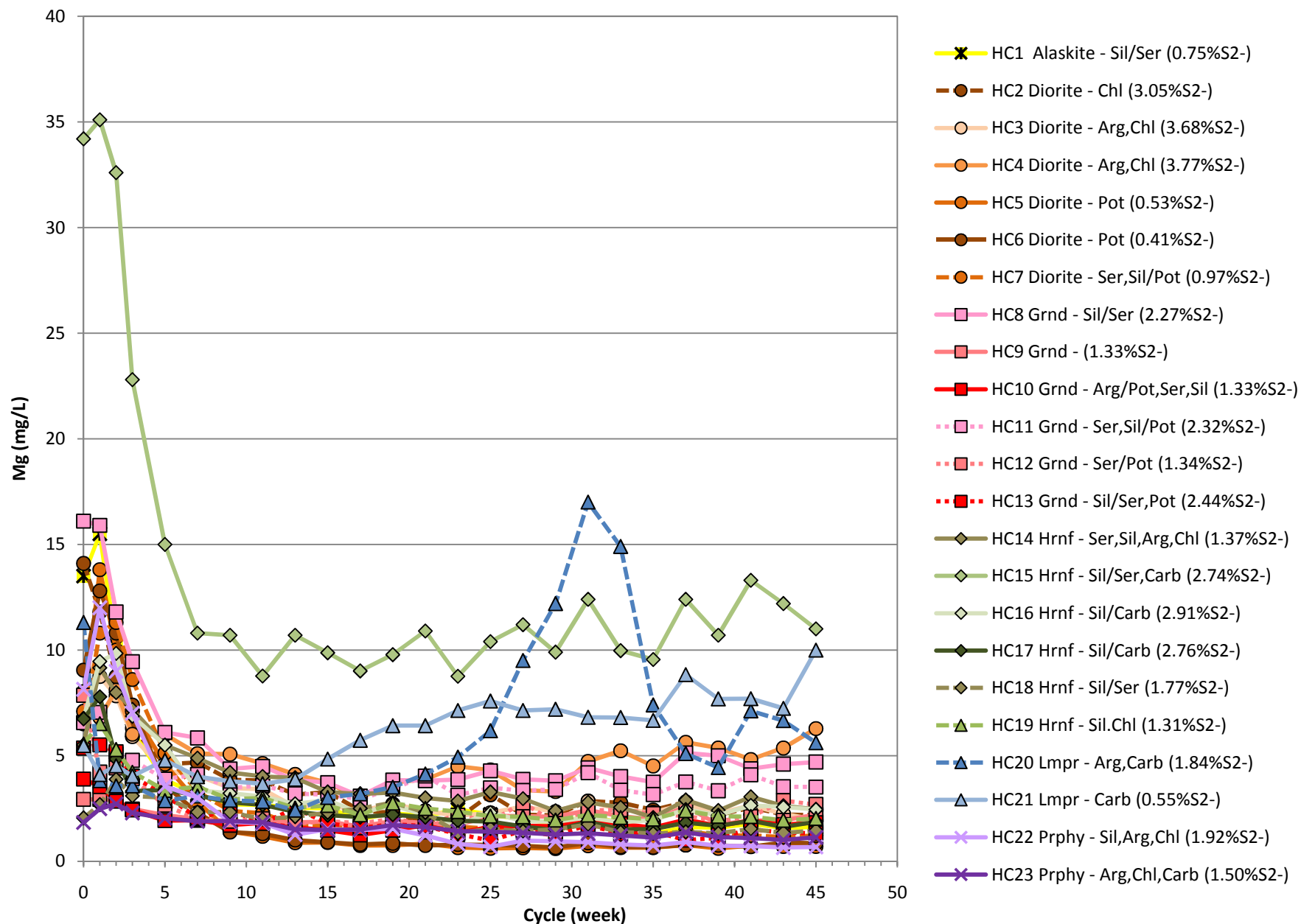
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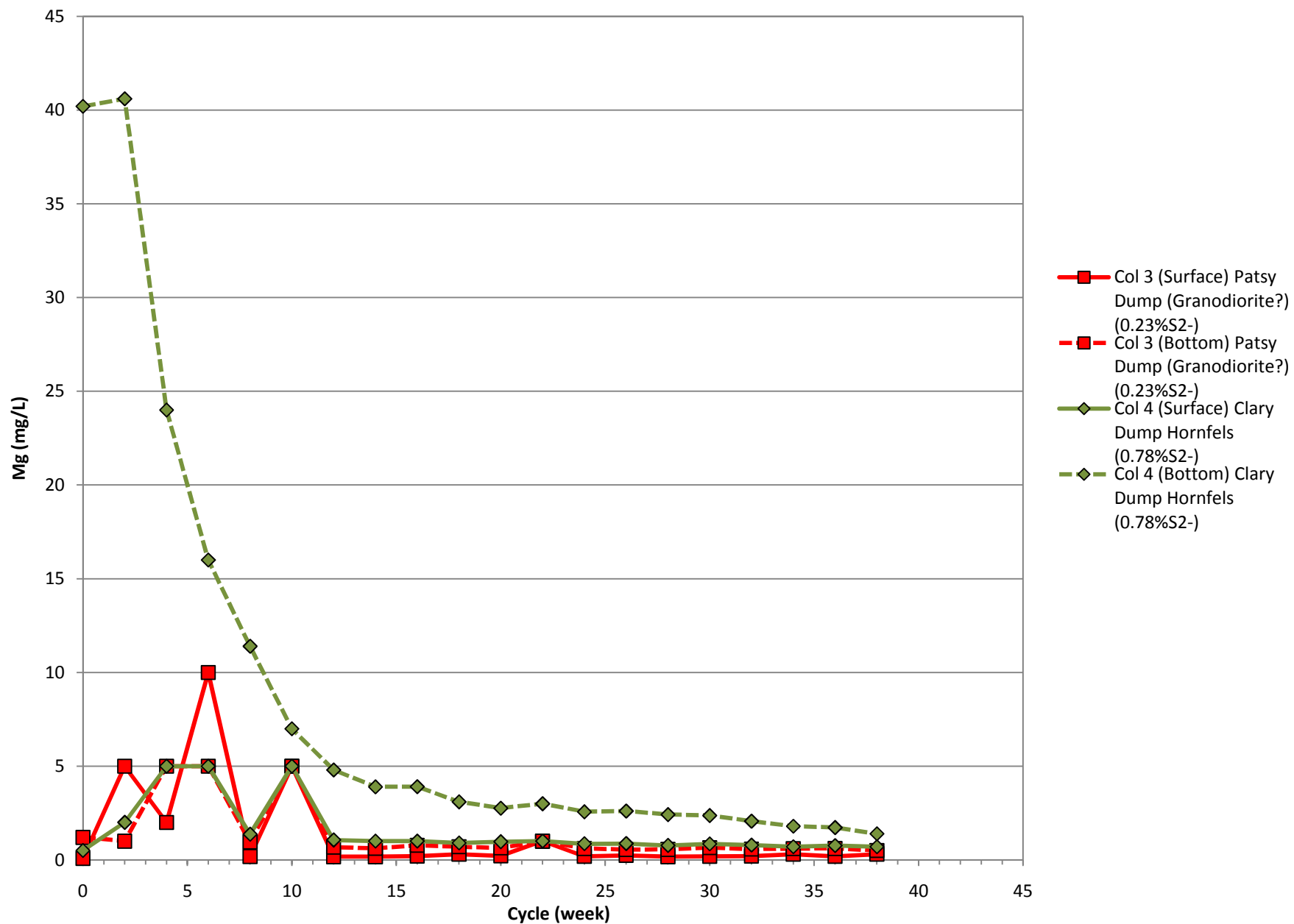
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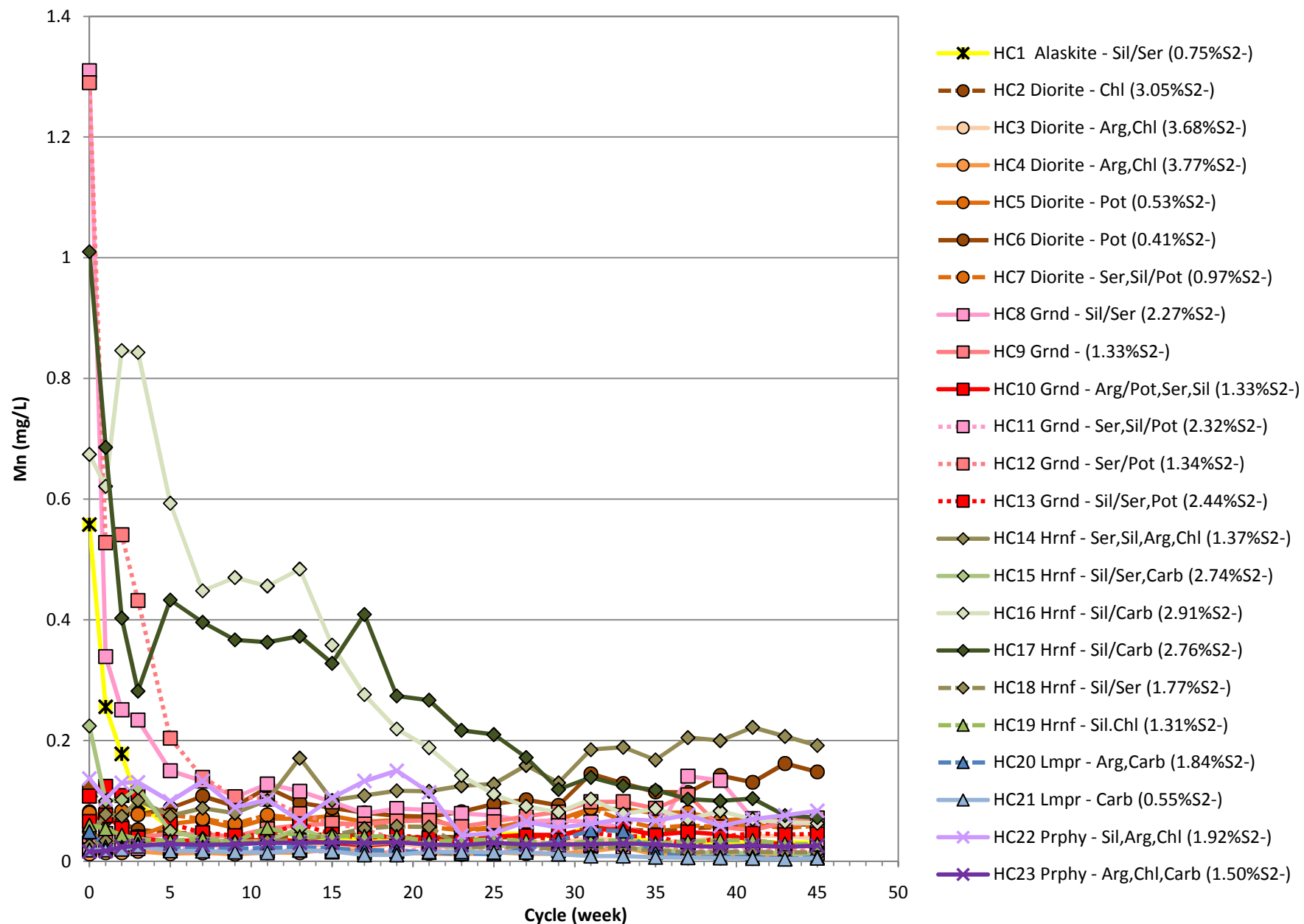
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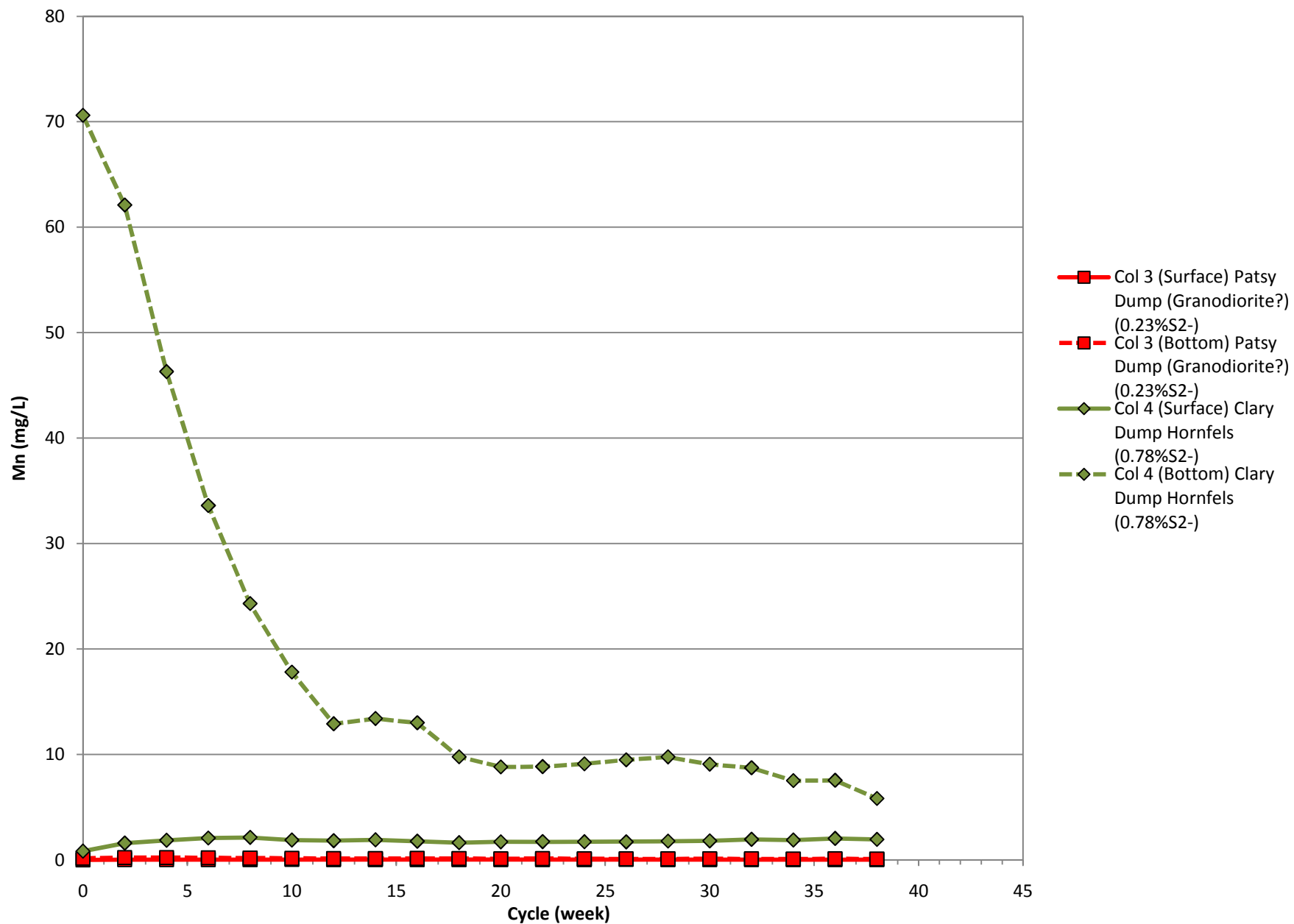
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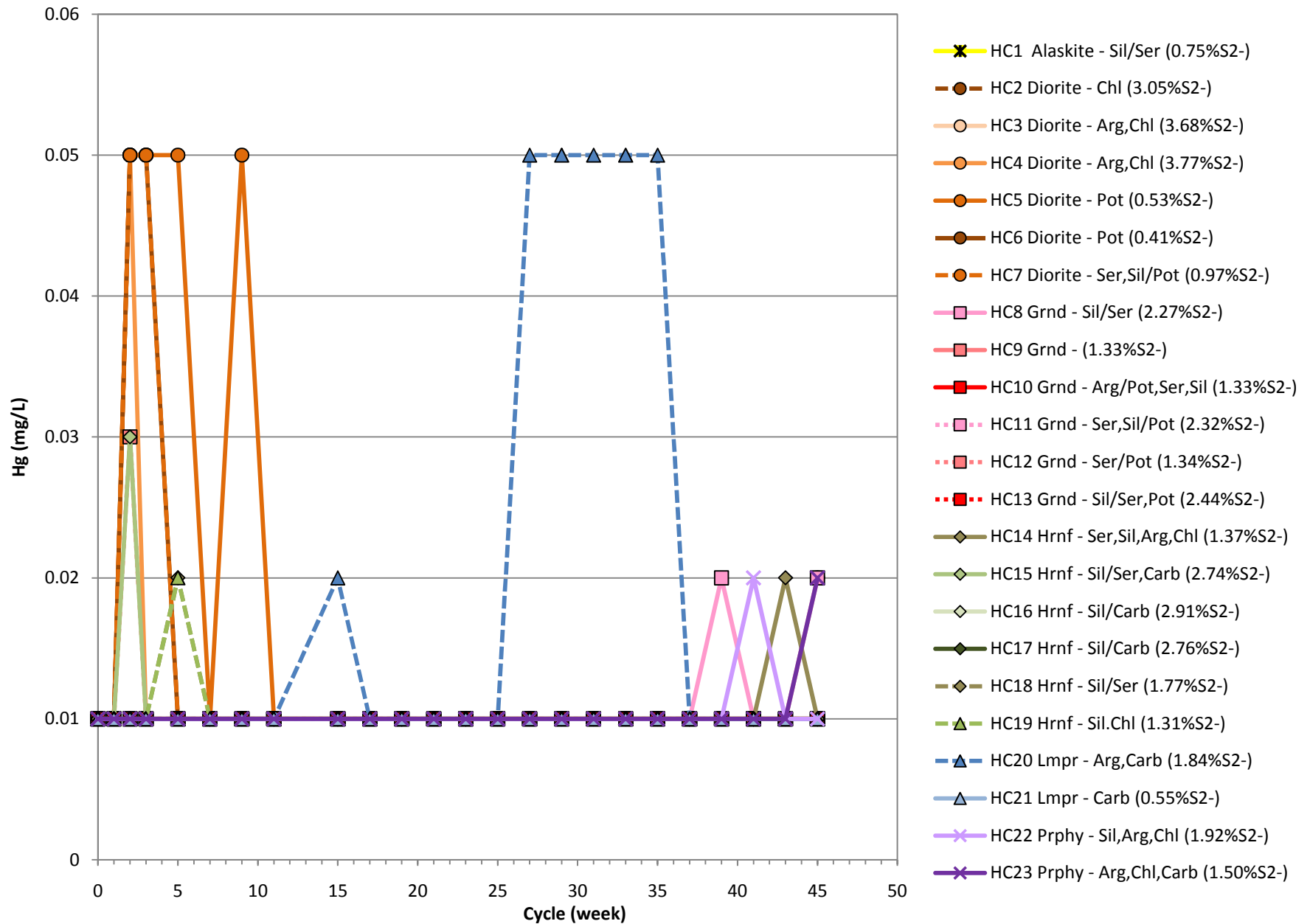
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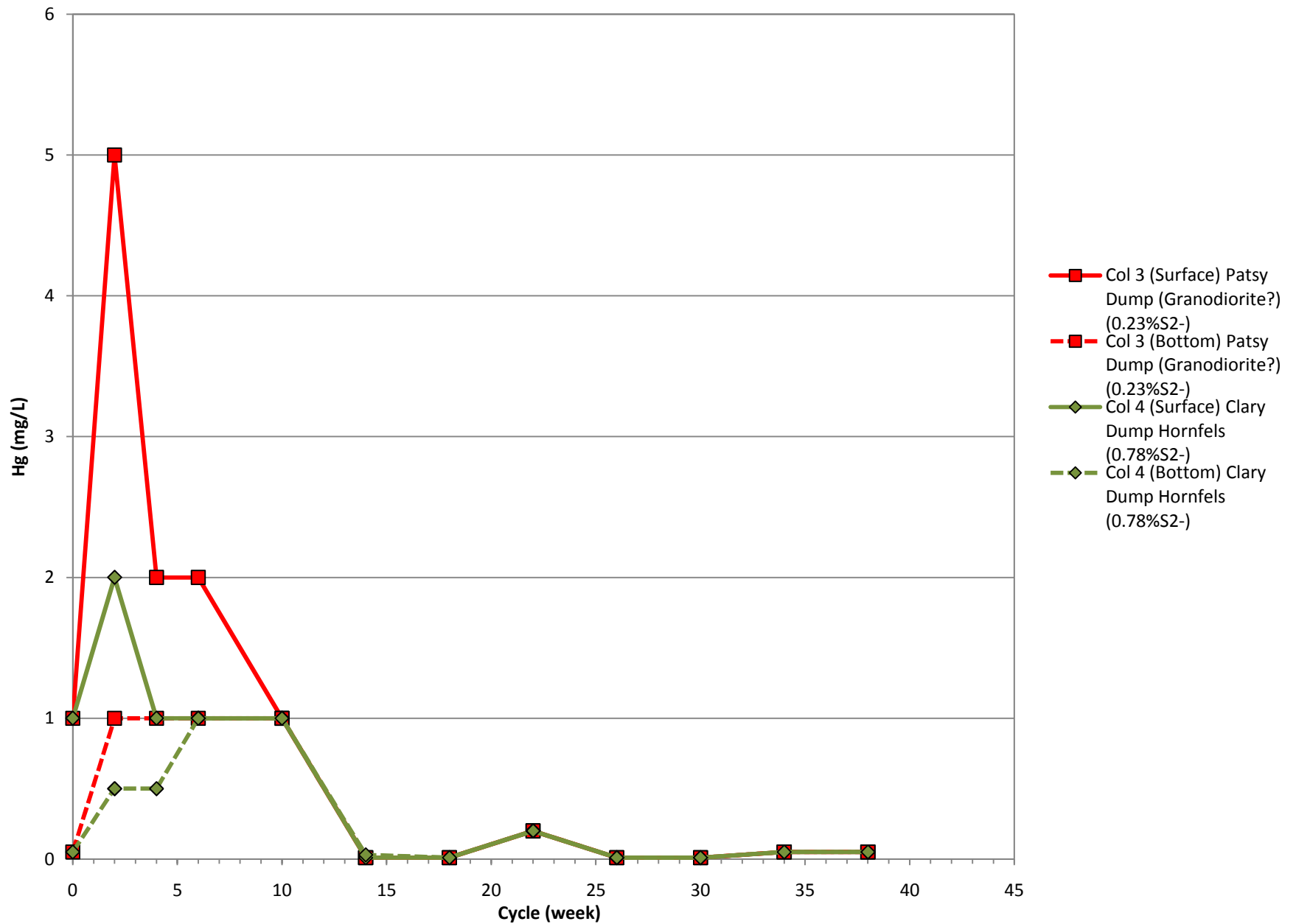
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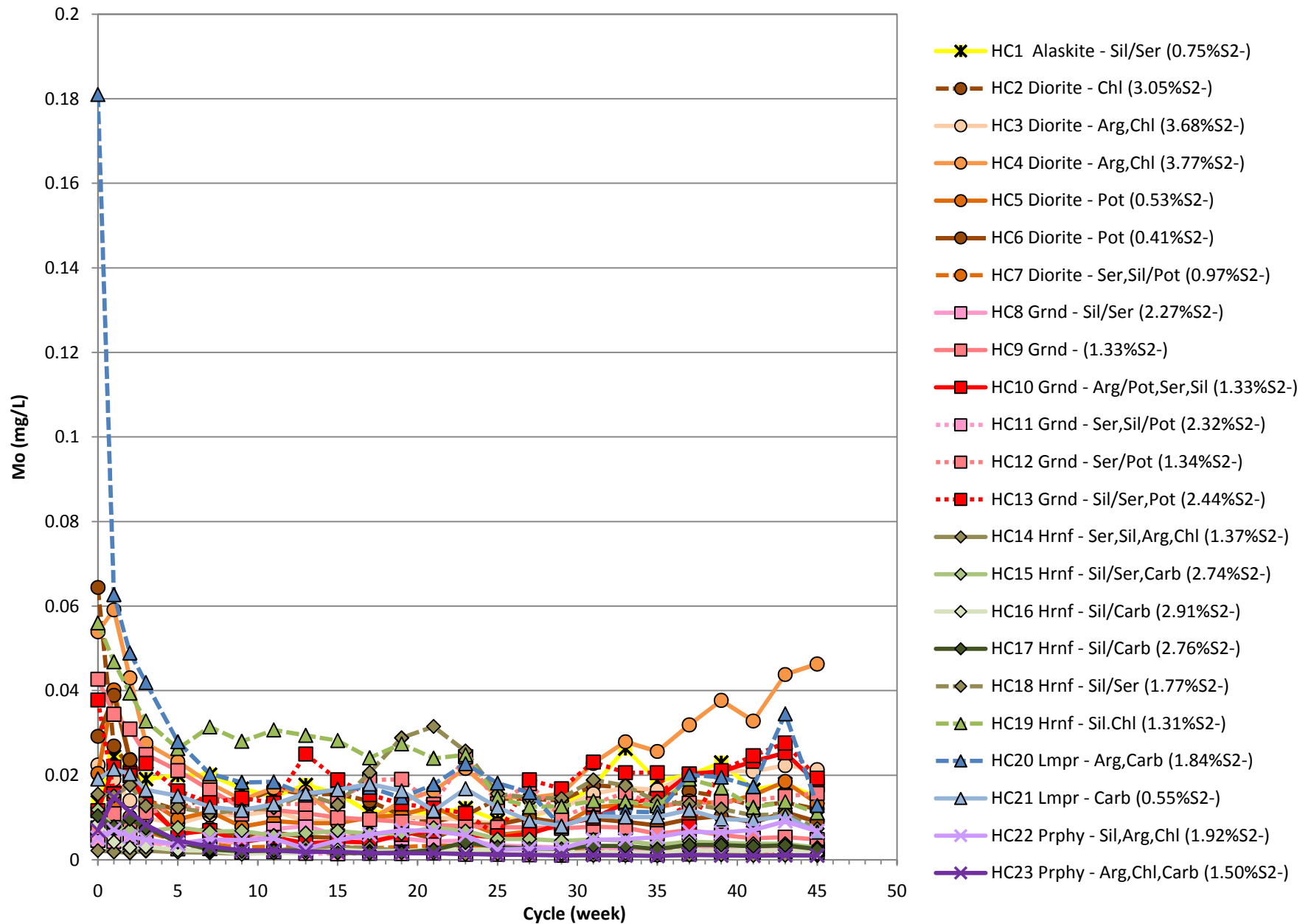
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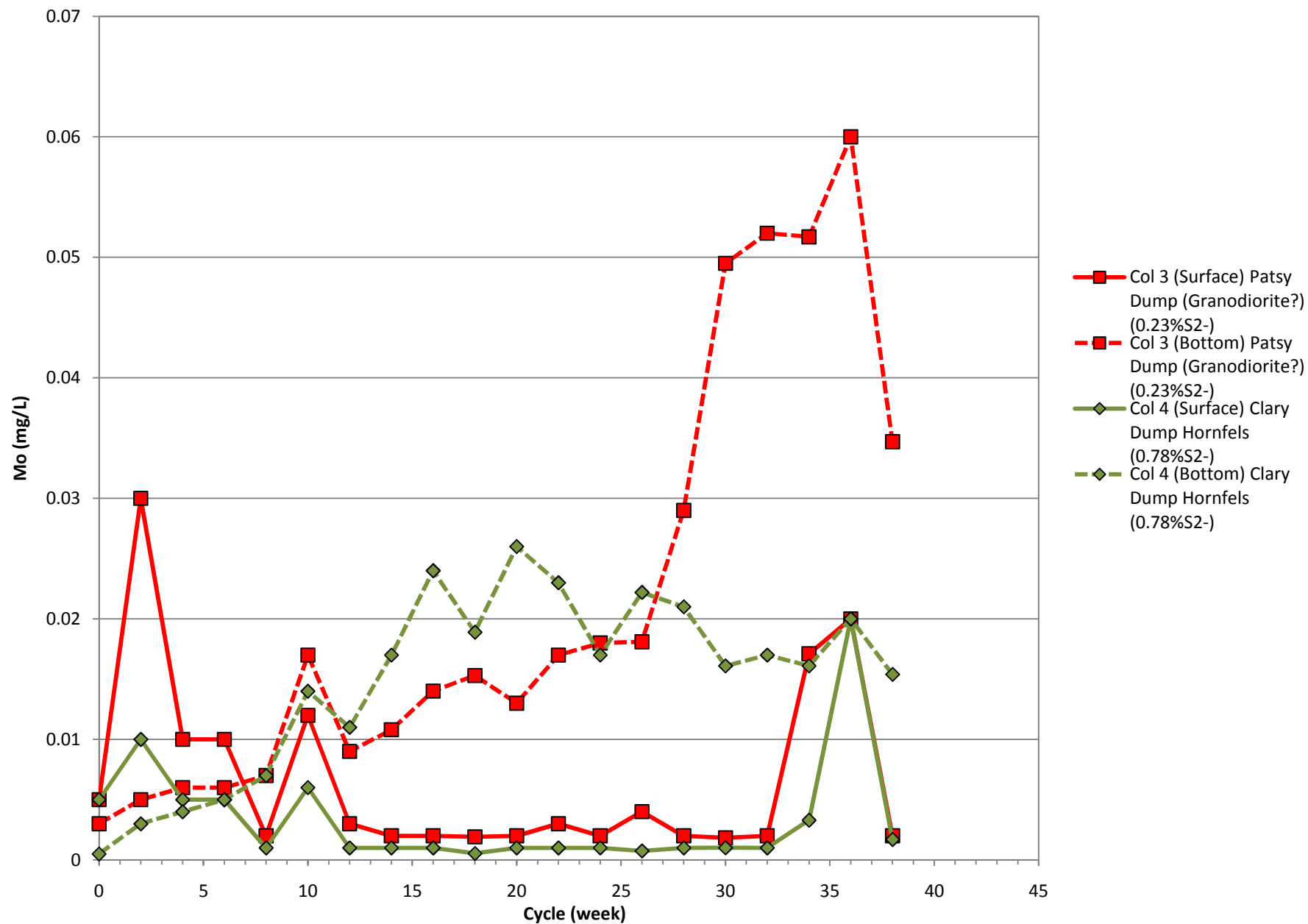
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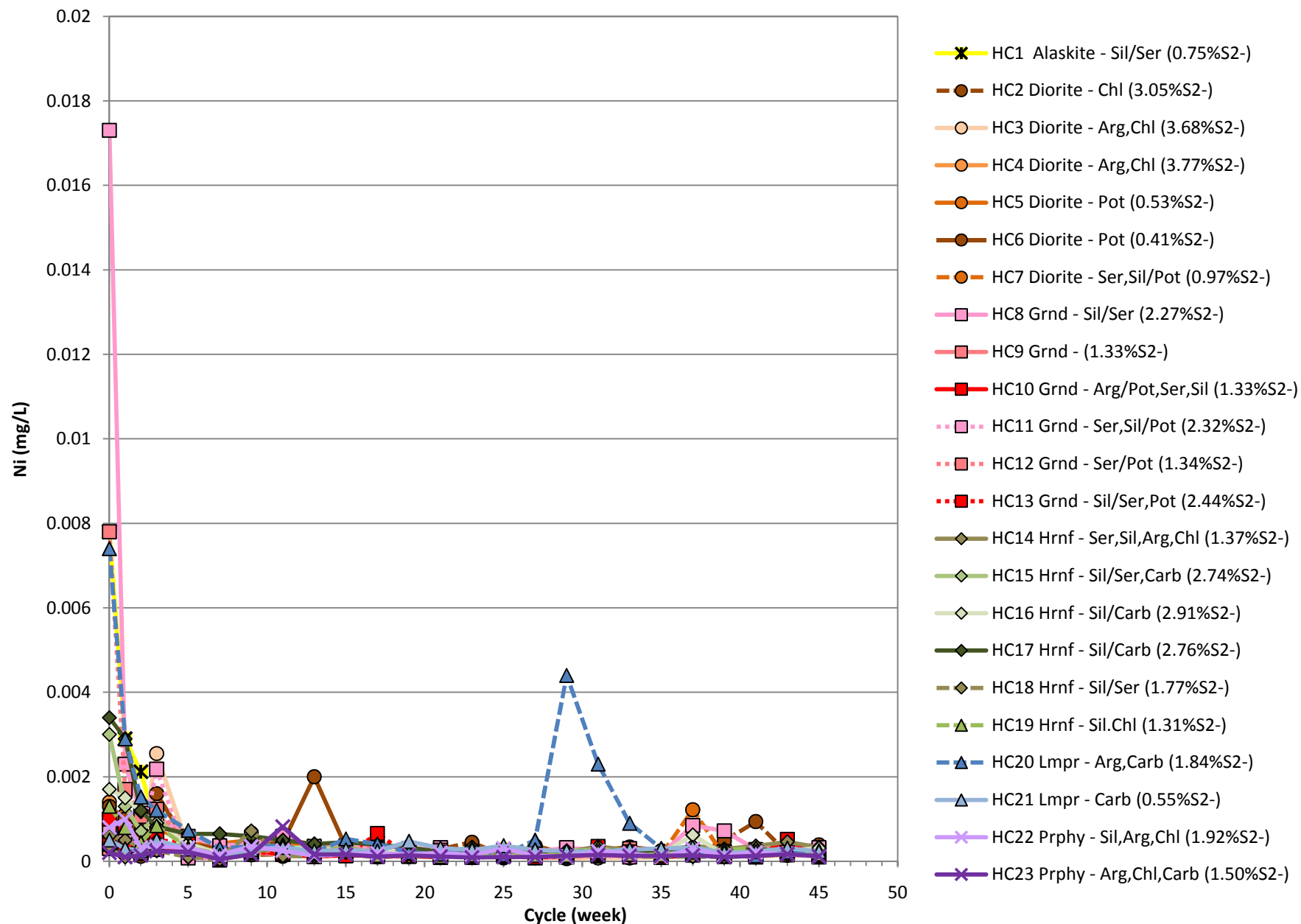
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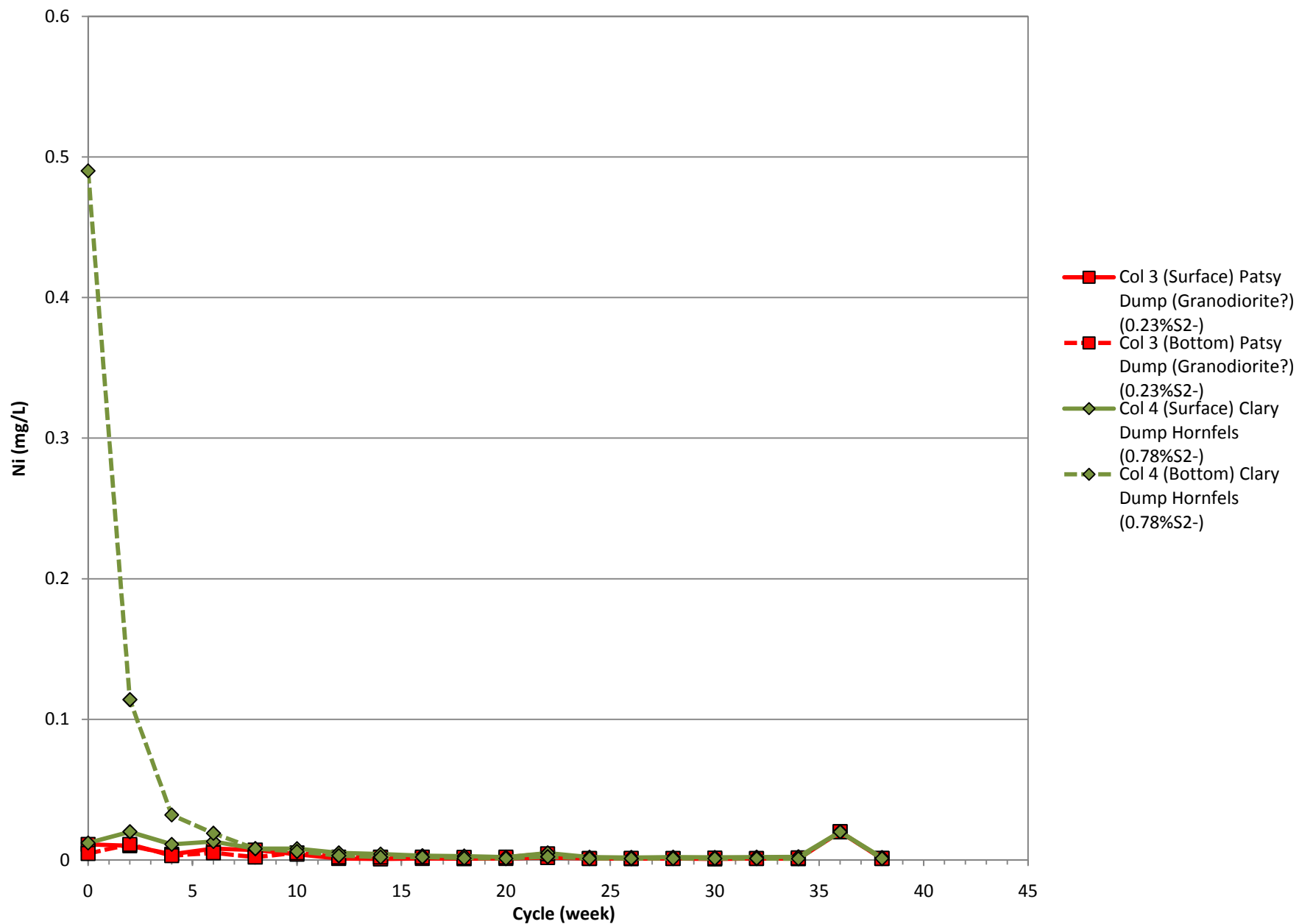
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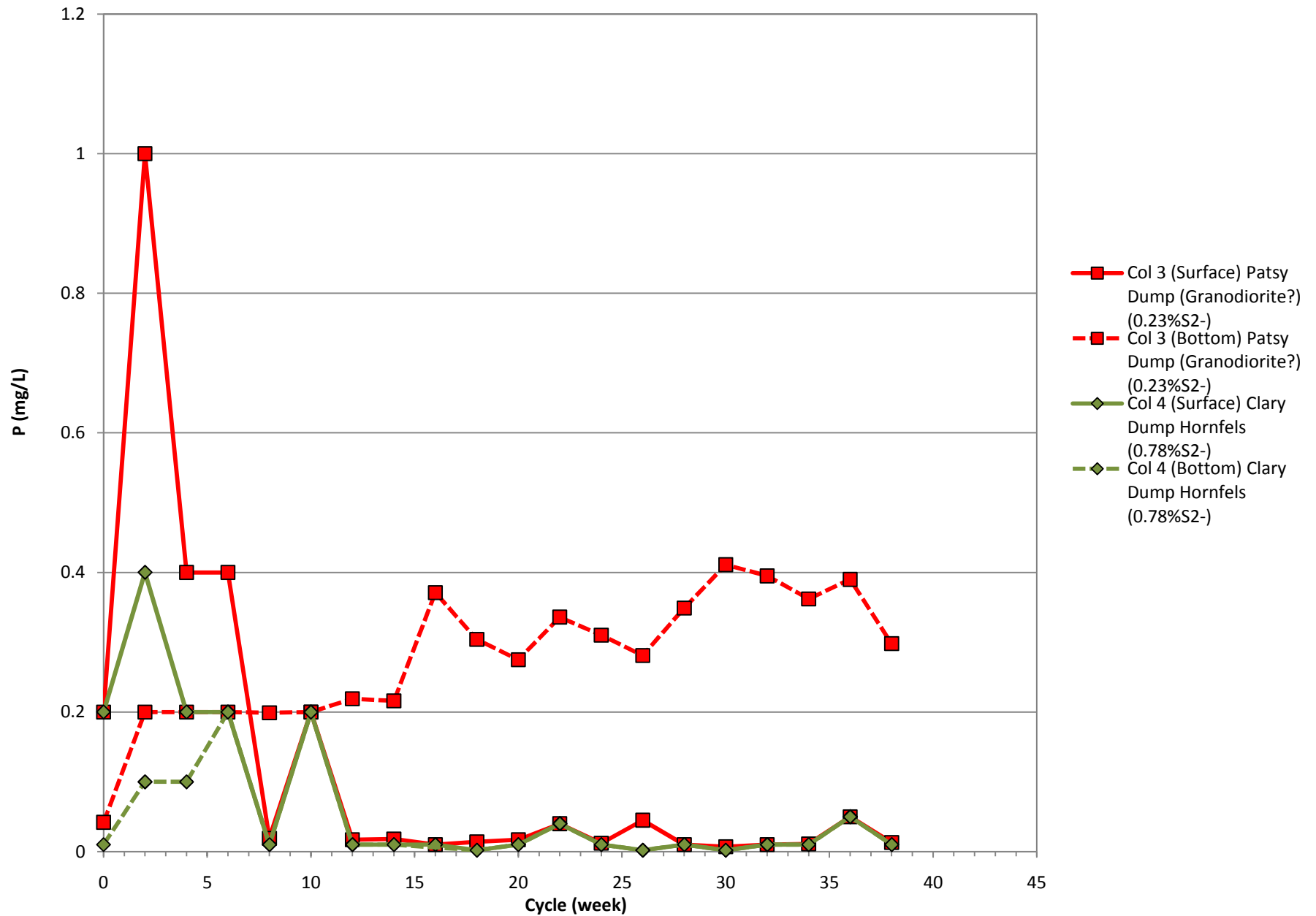
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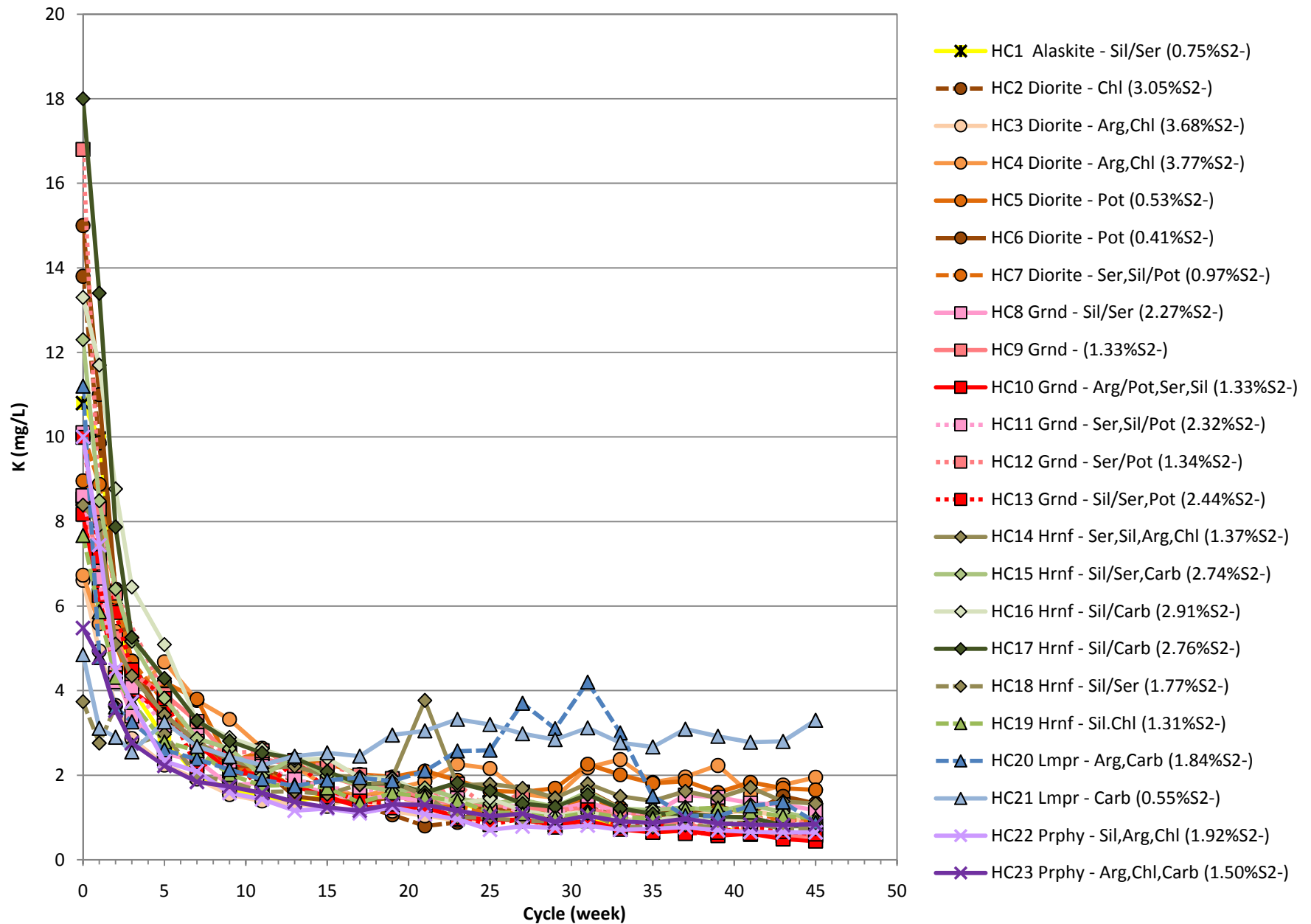
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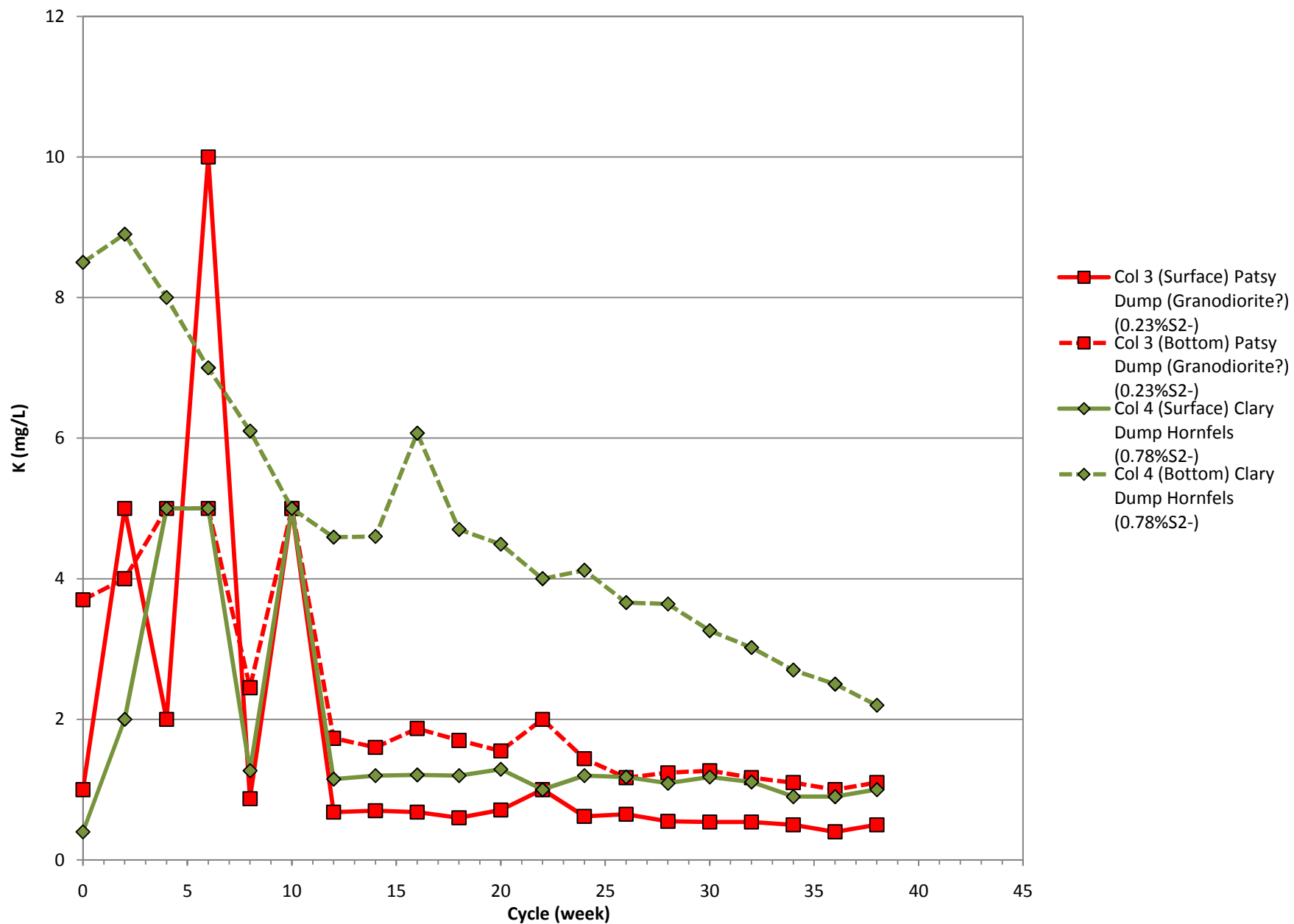
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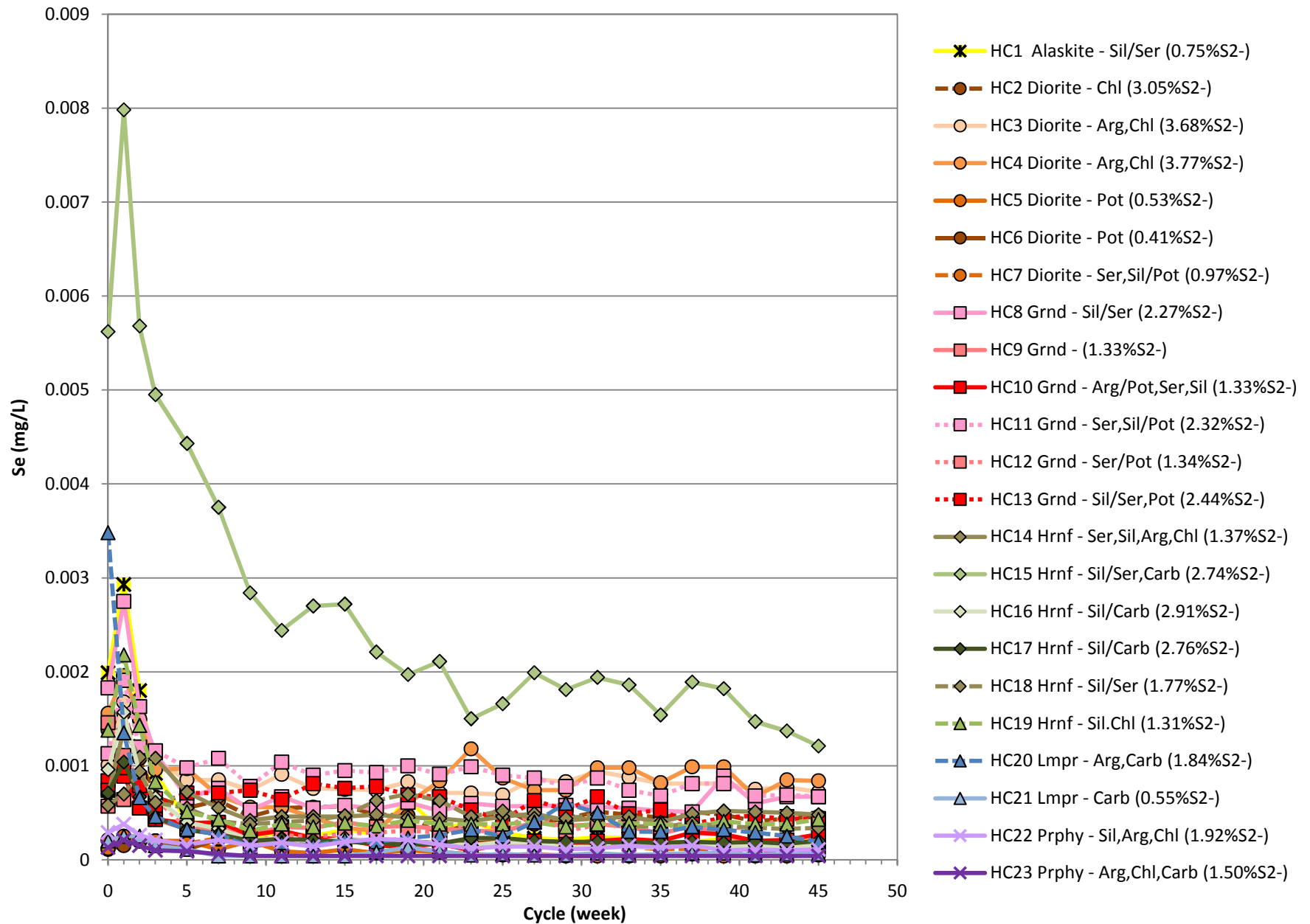
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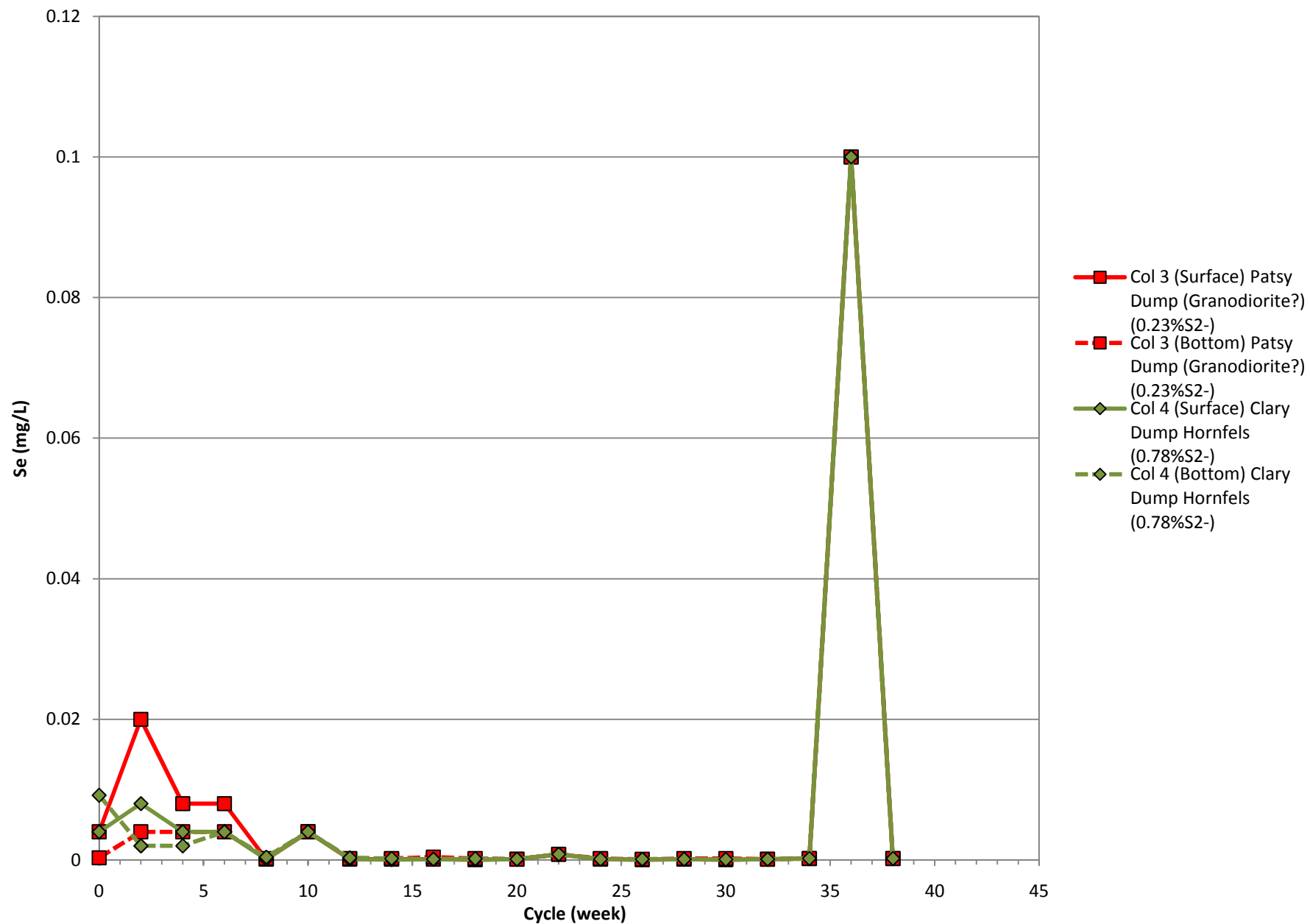
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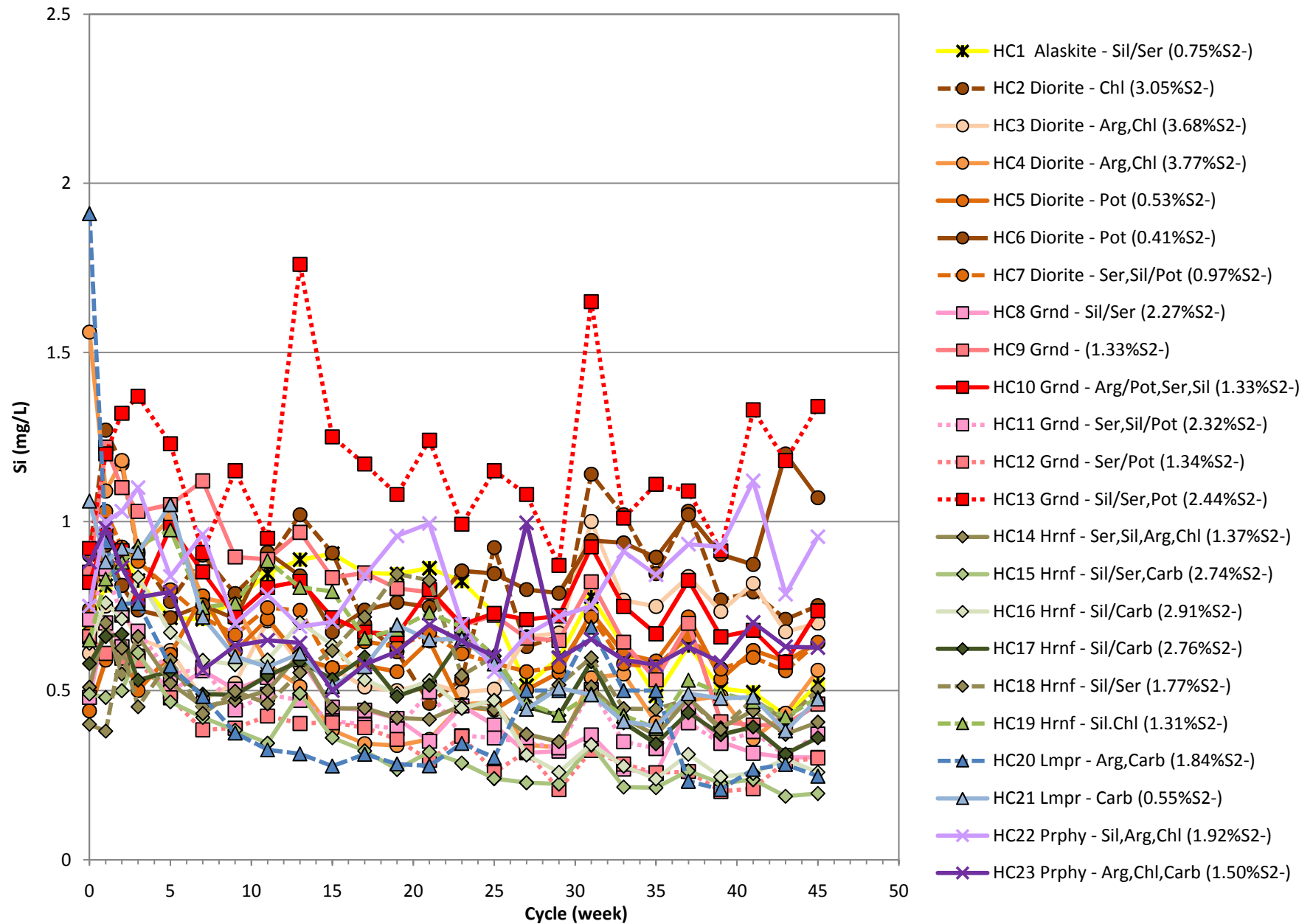
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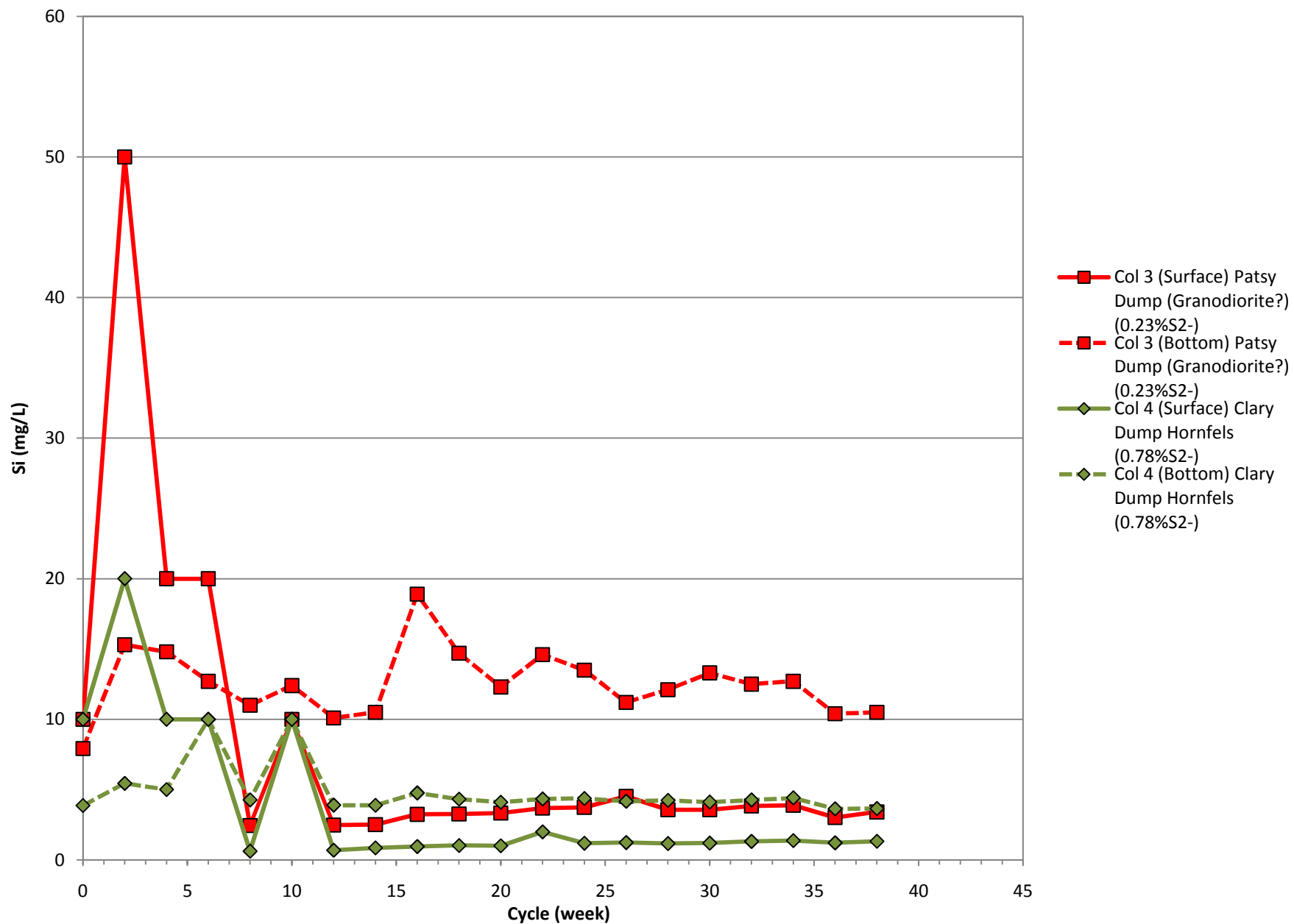
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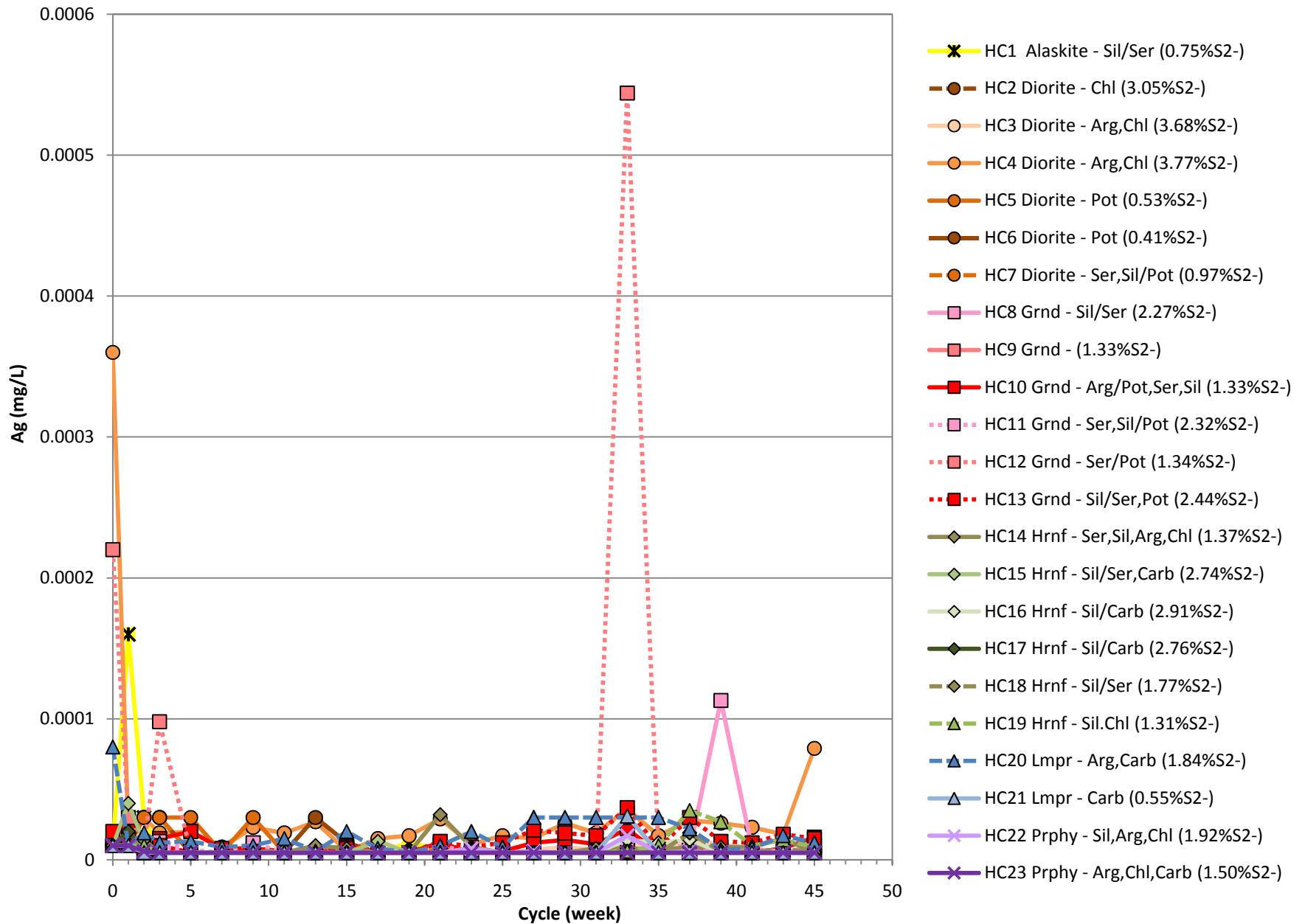
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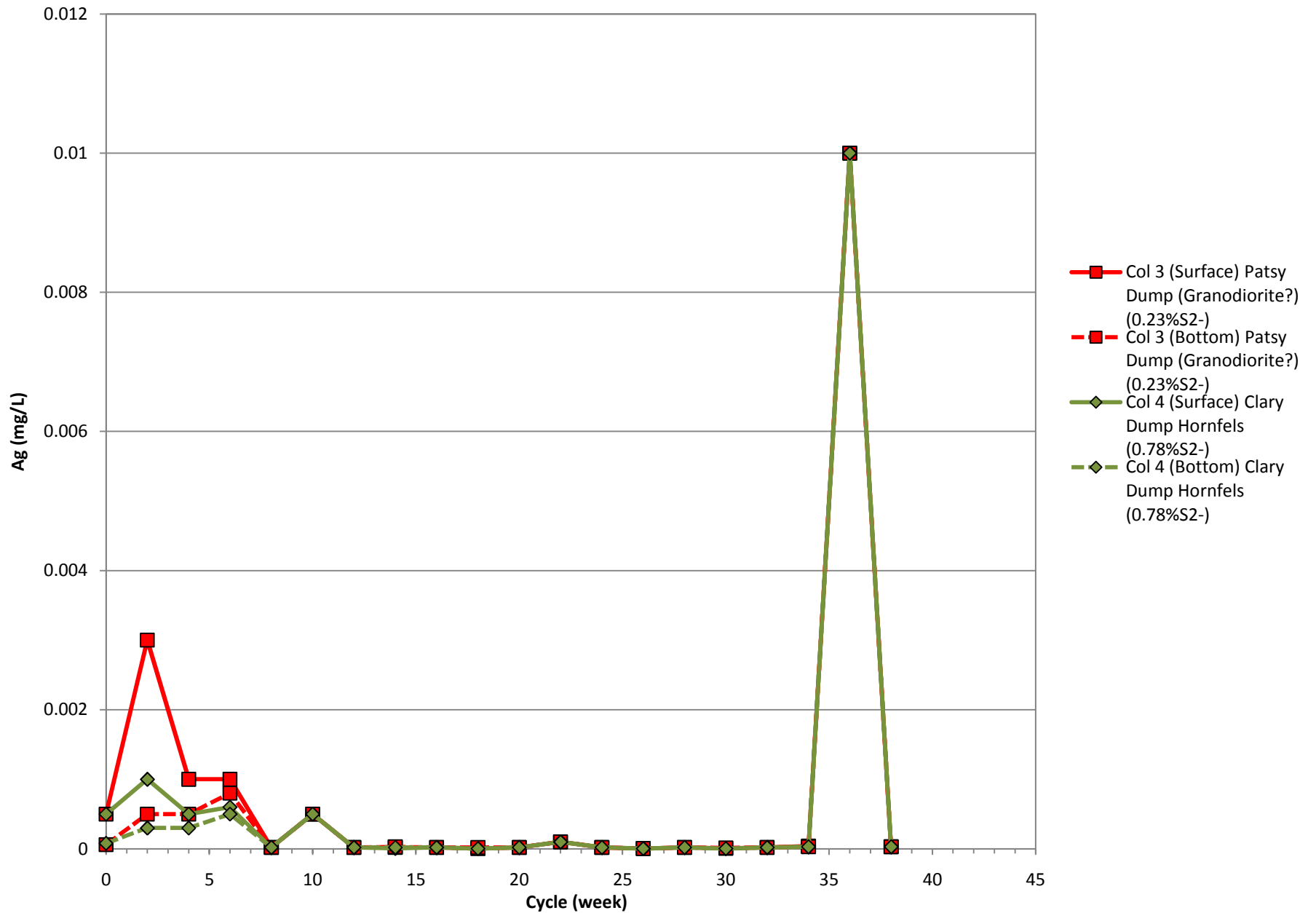
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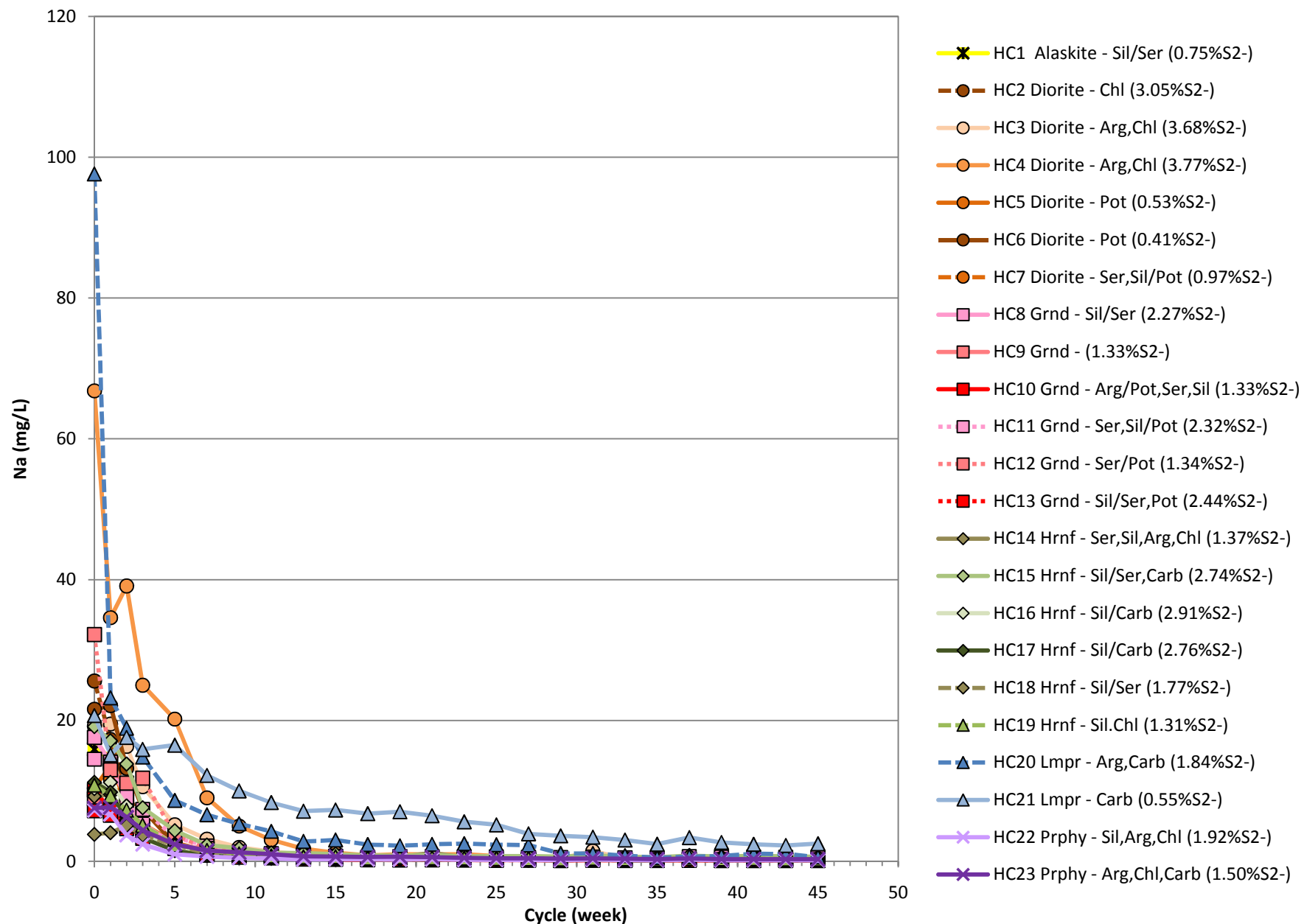
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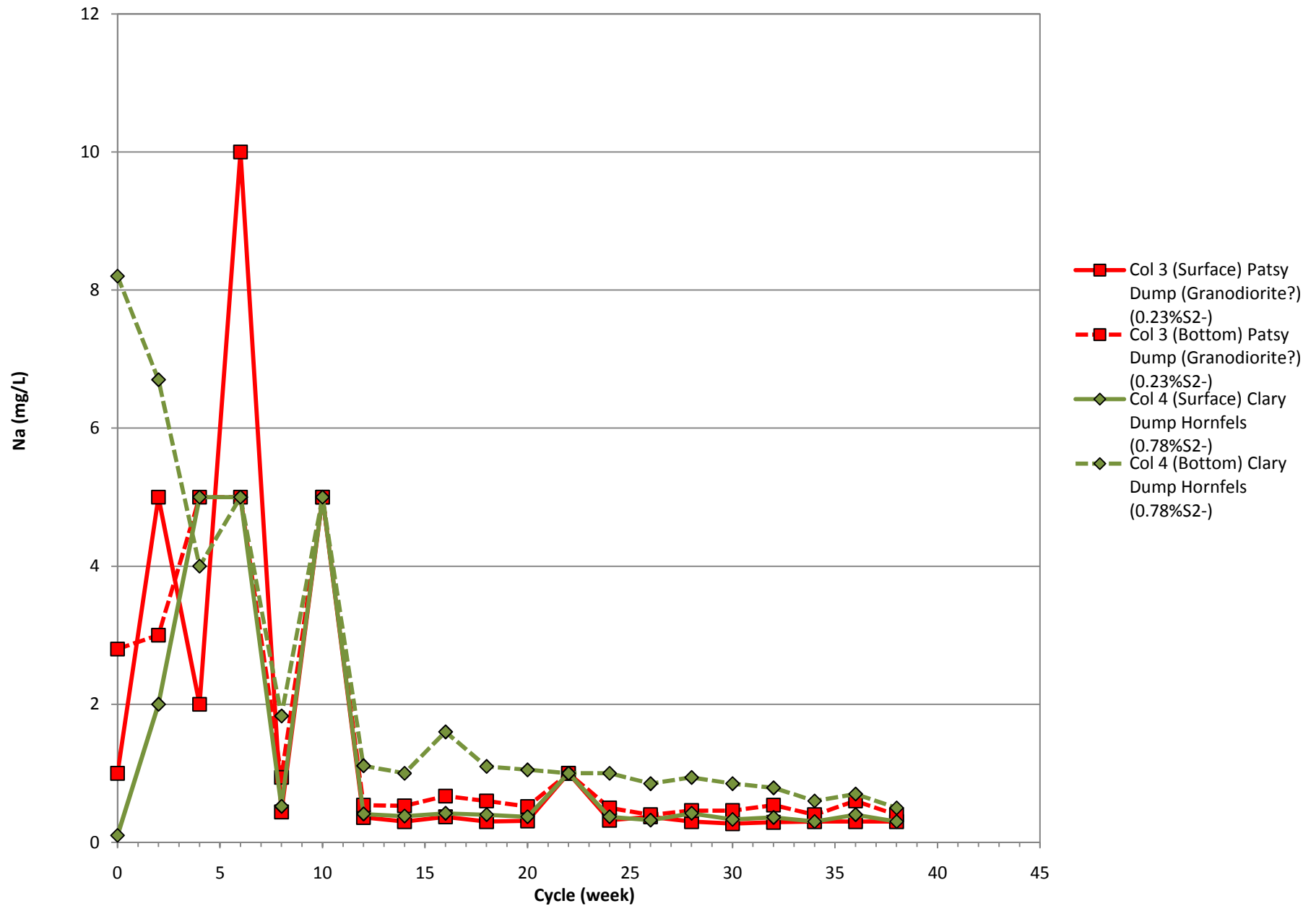
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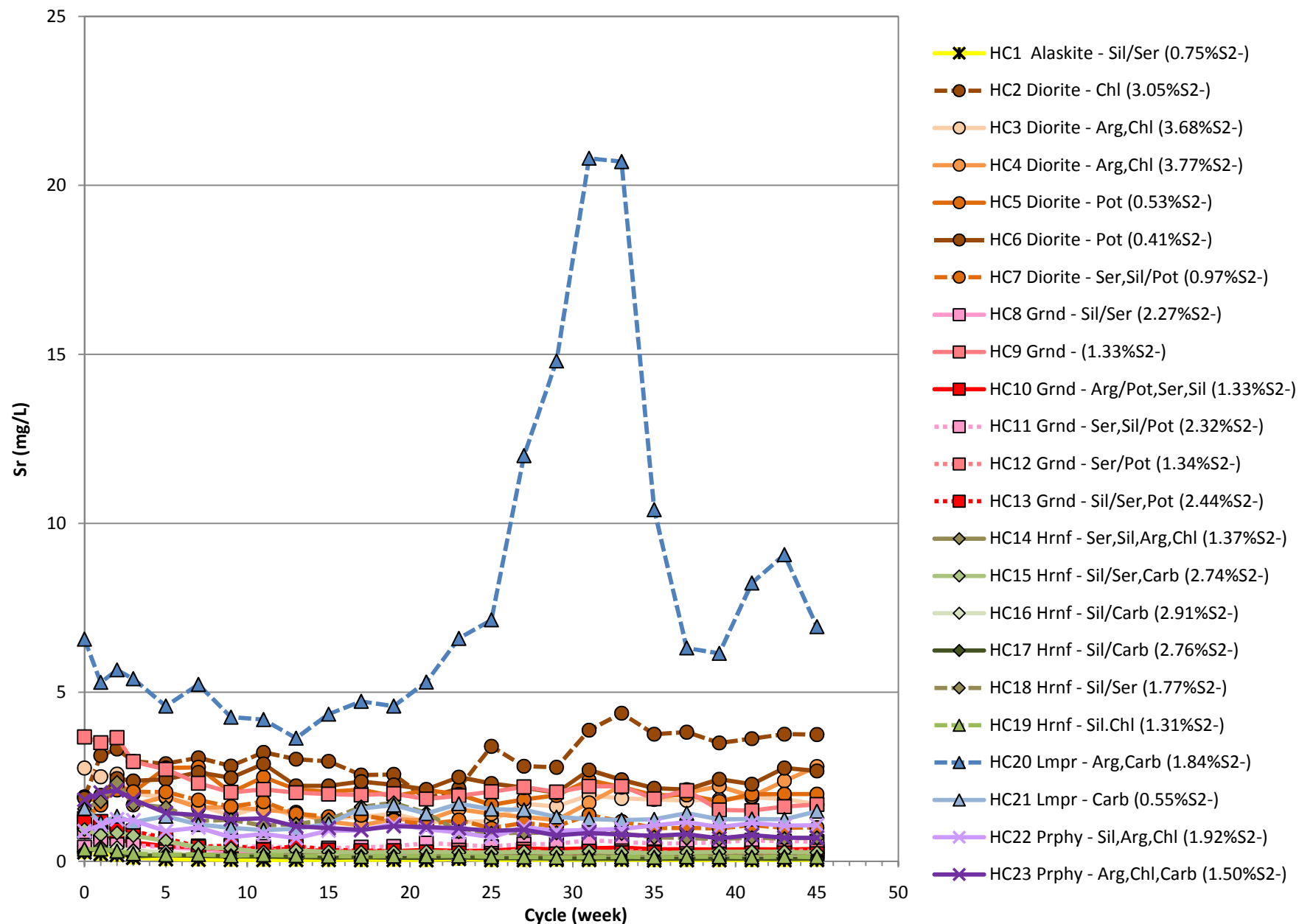
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Rock\WR Test program\Kinetic Test Program\Kinetic



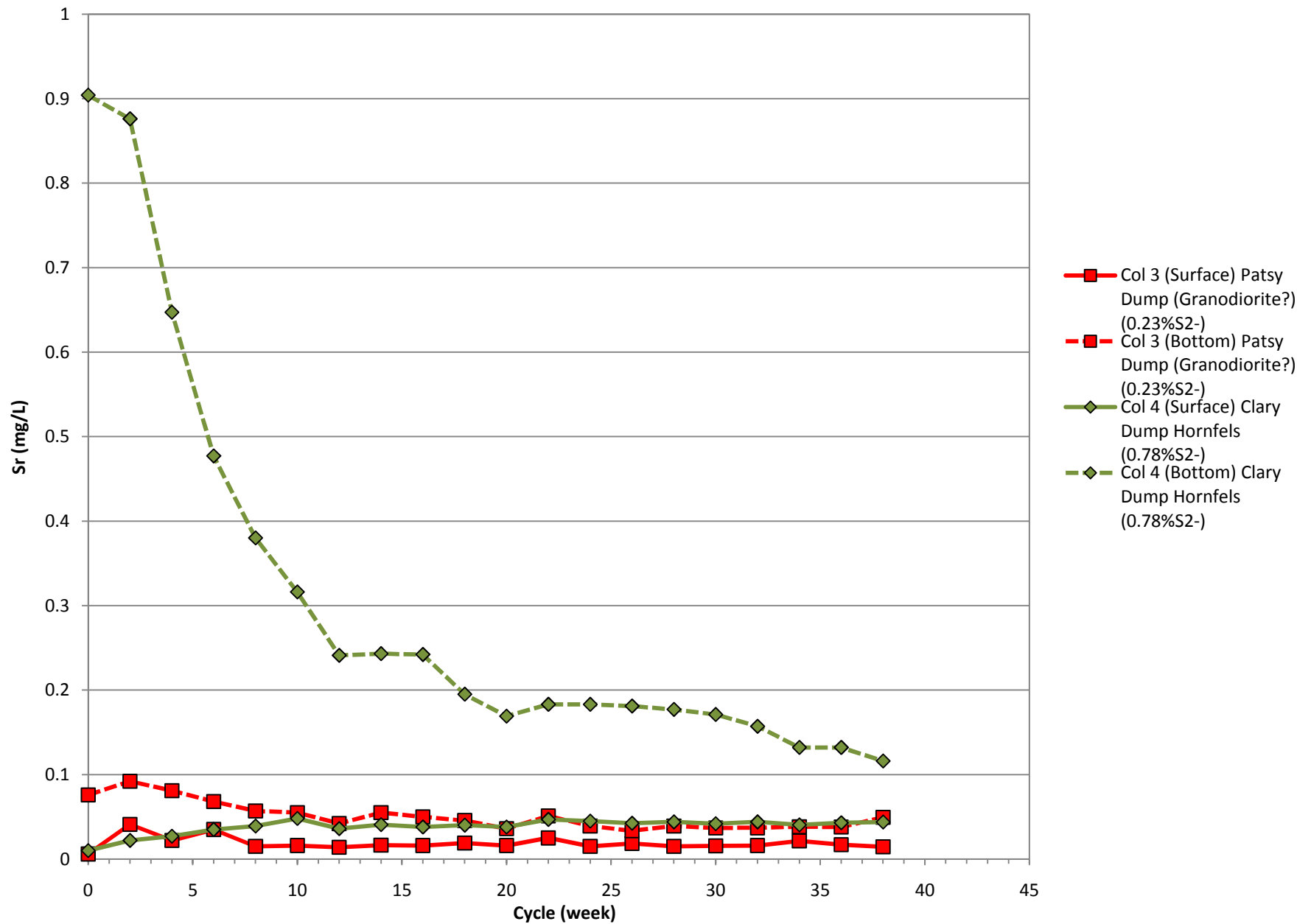
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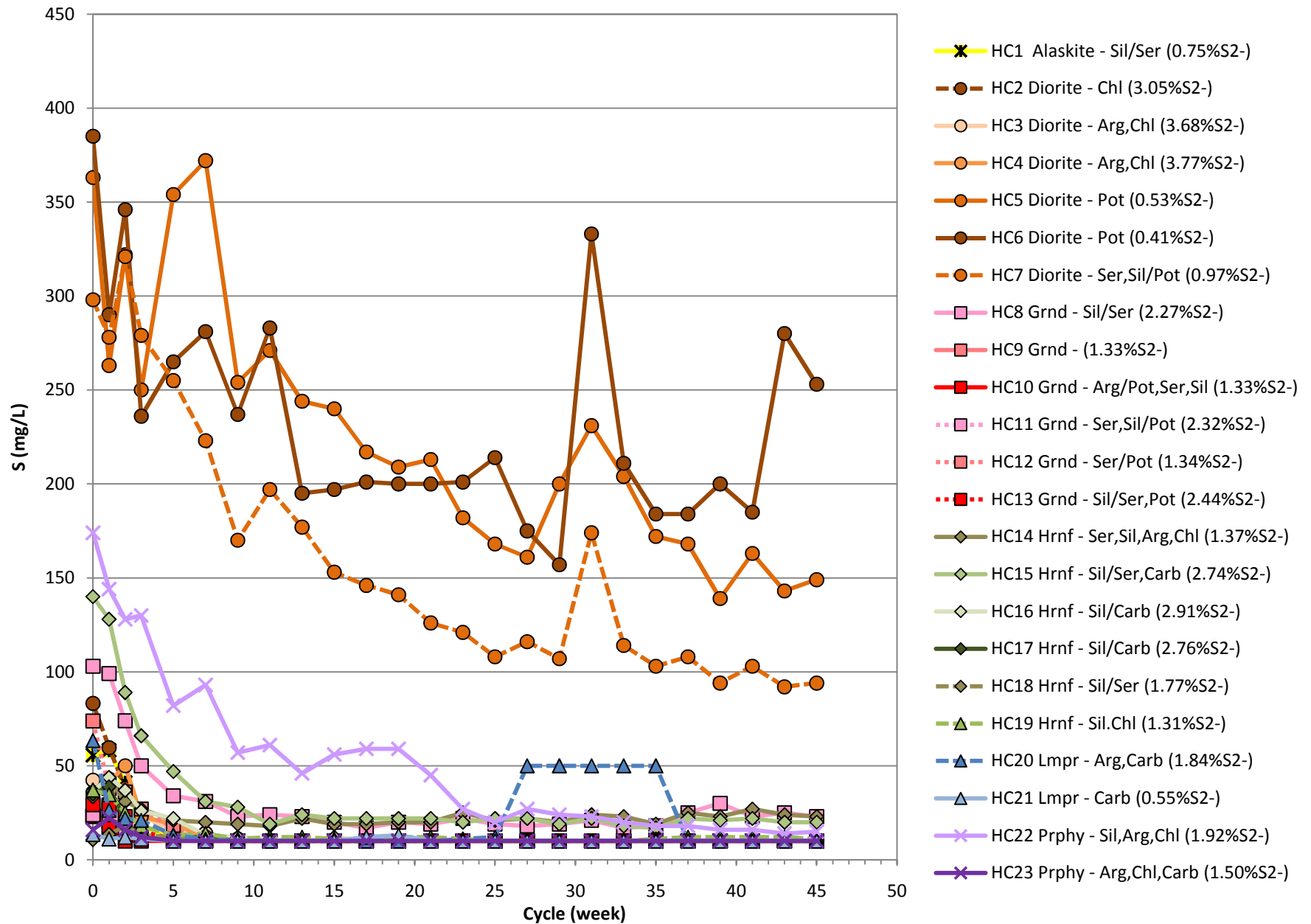
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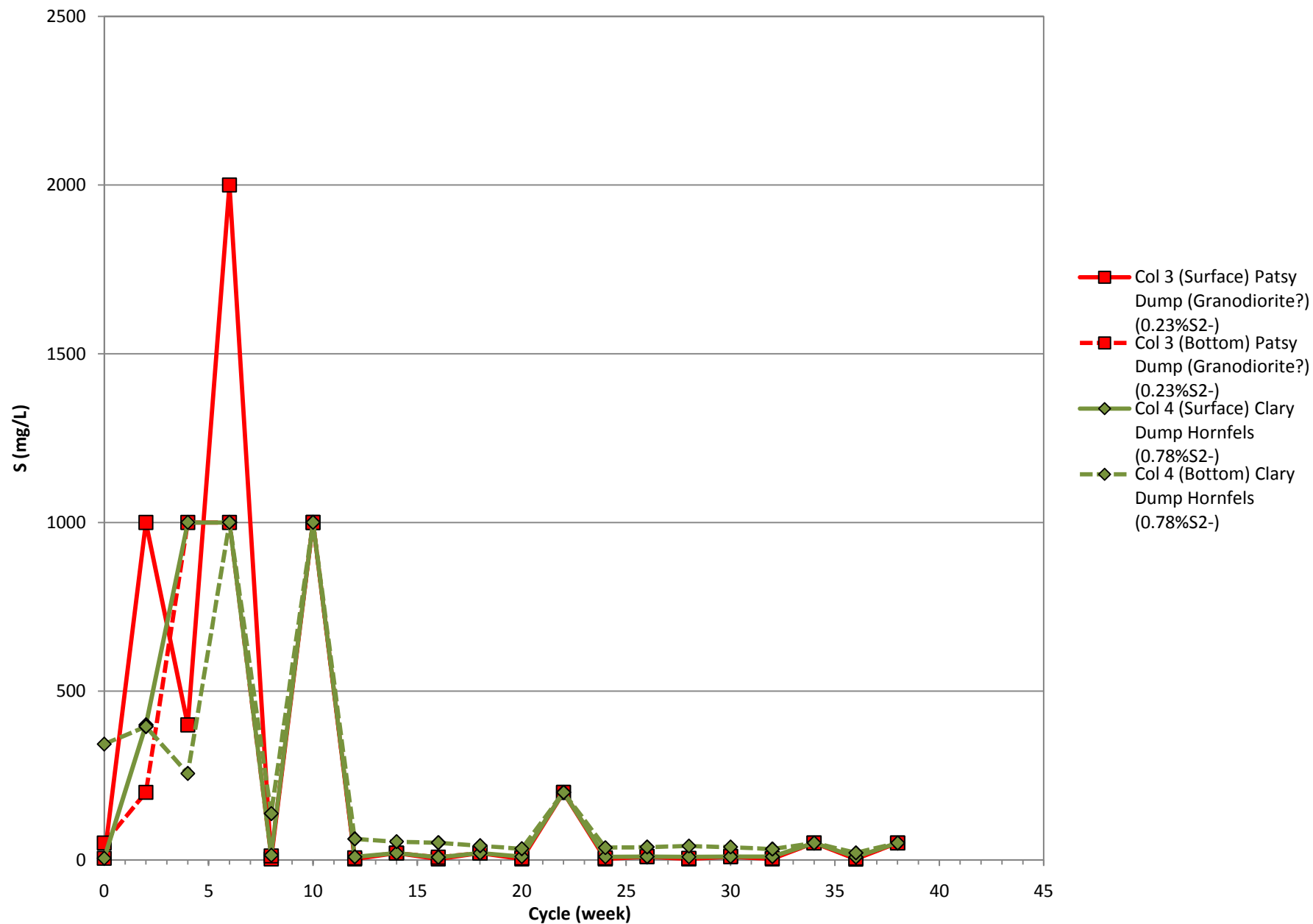
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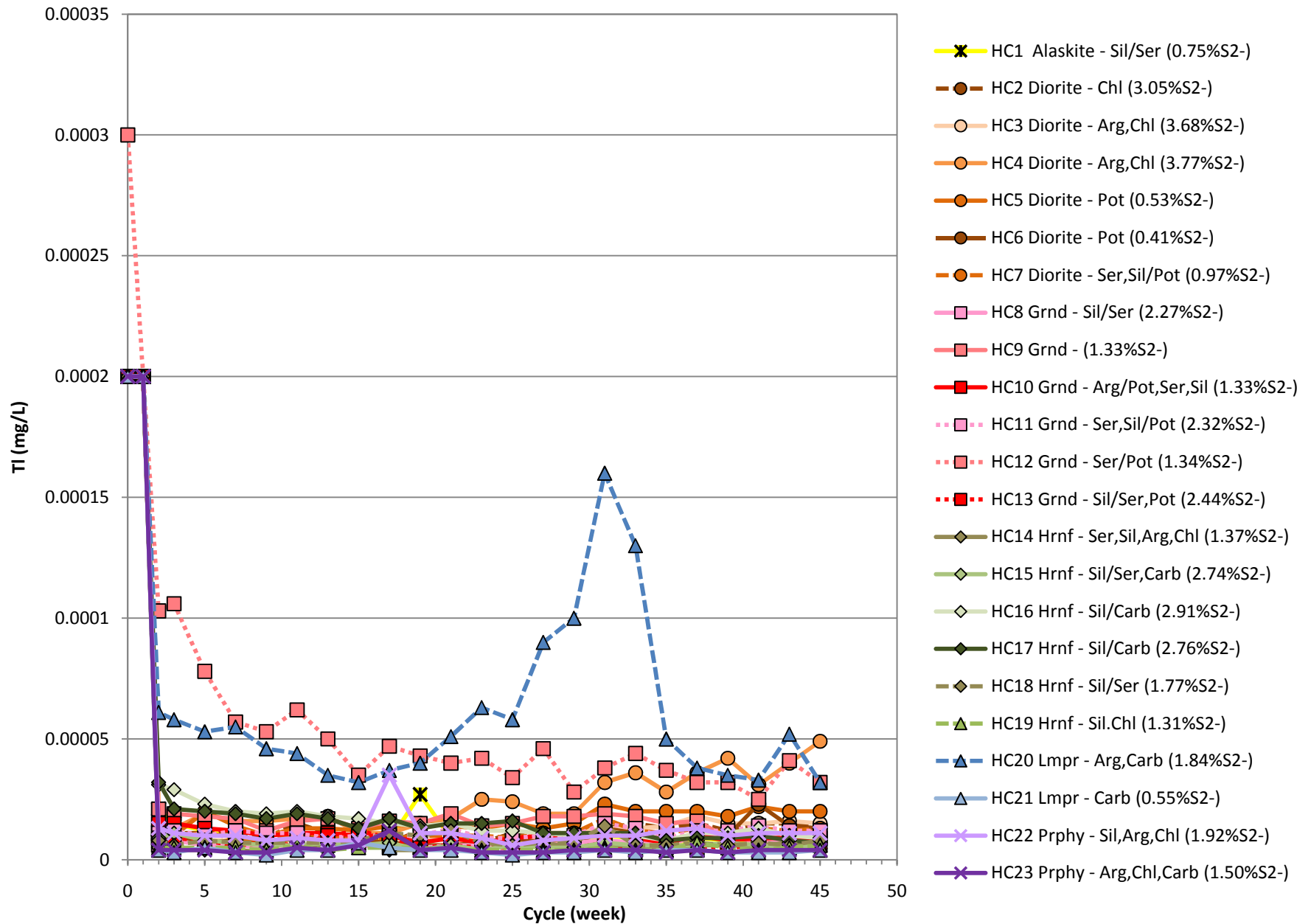
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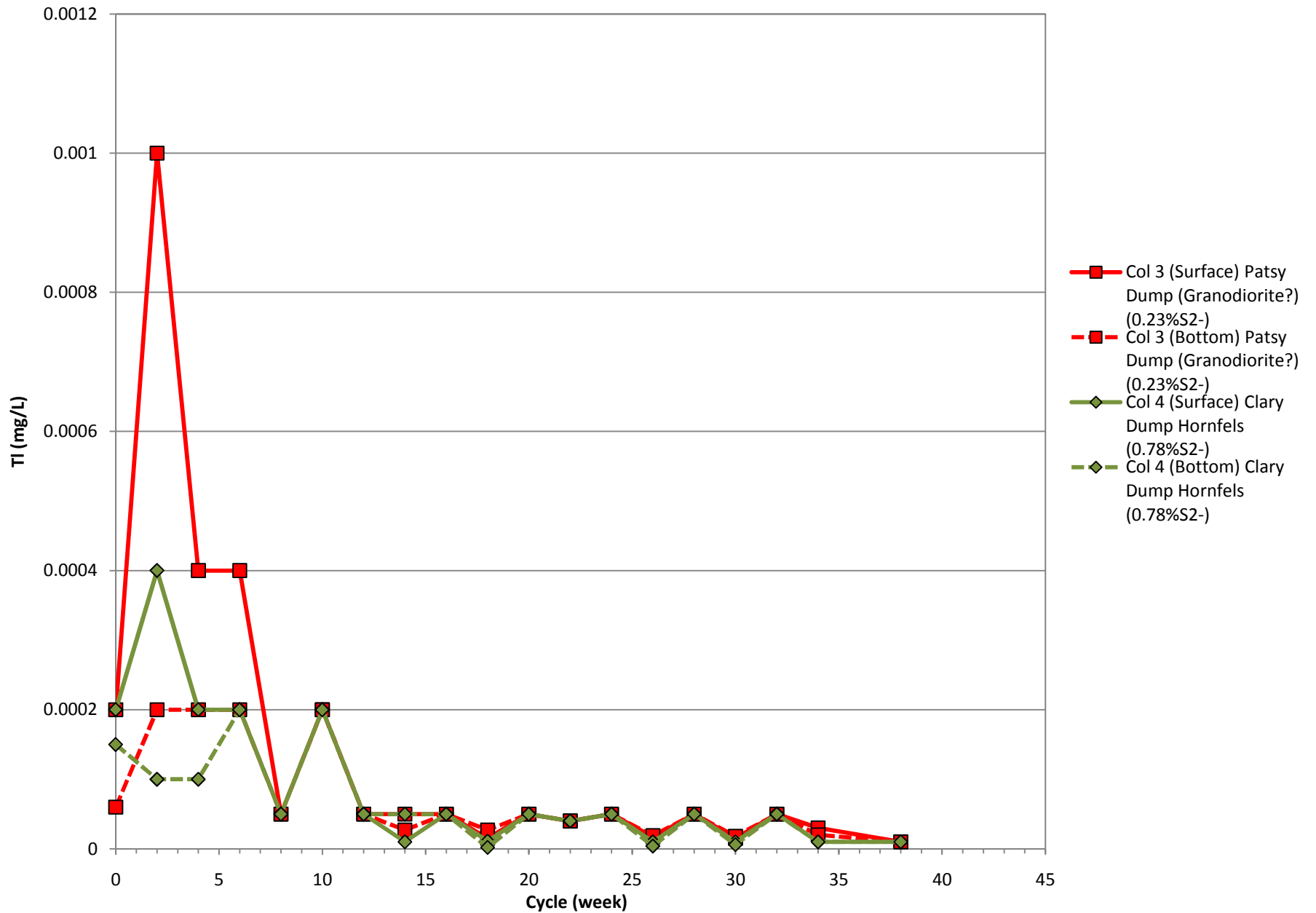
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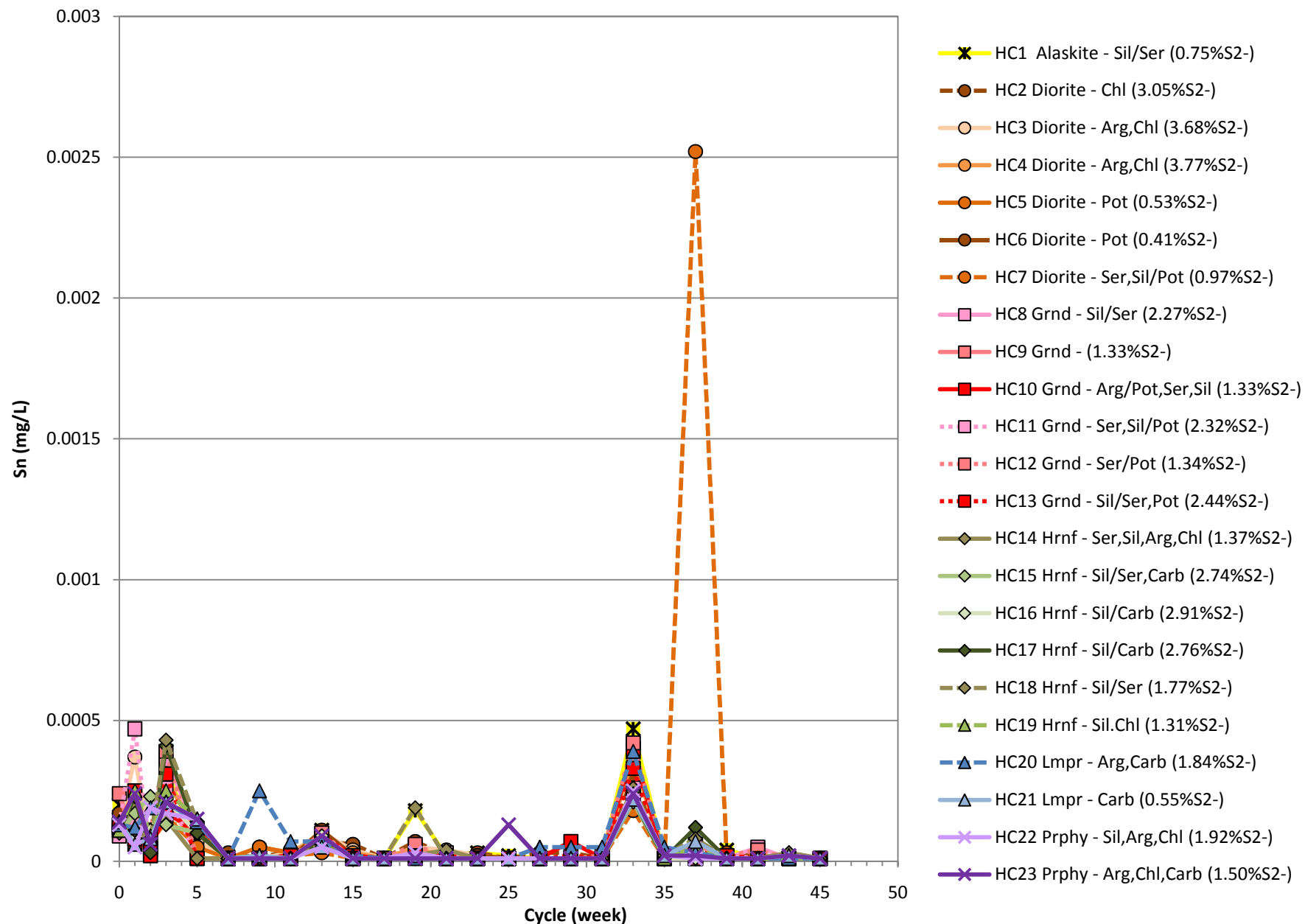
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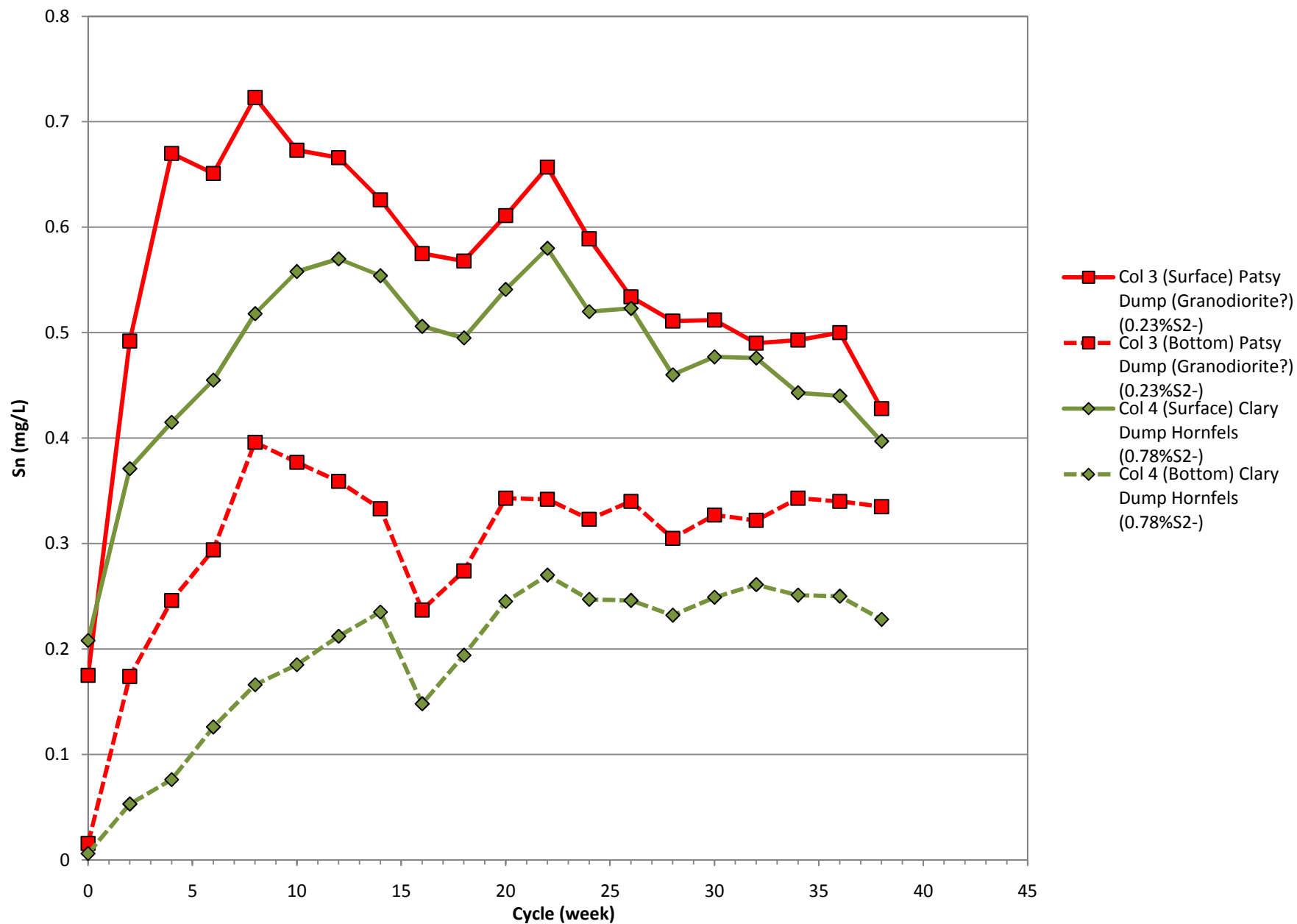
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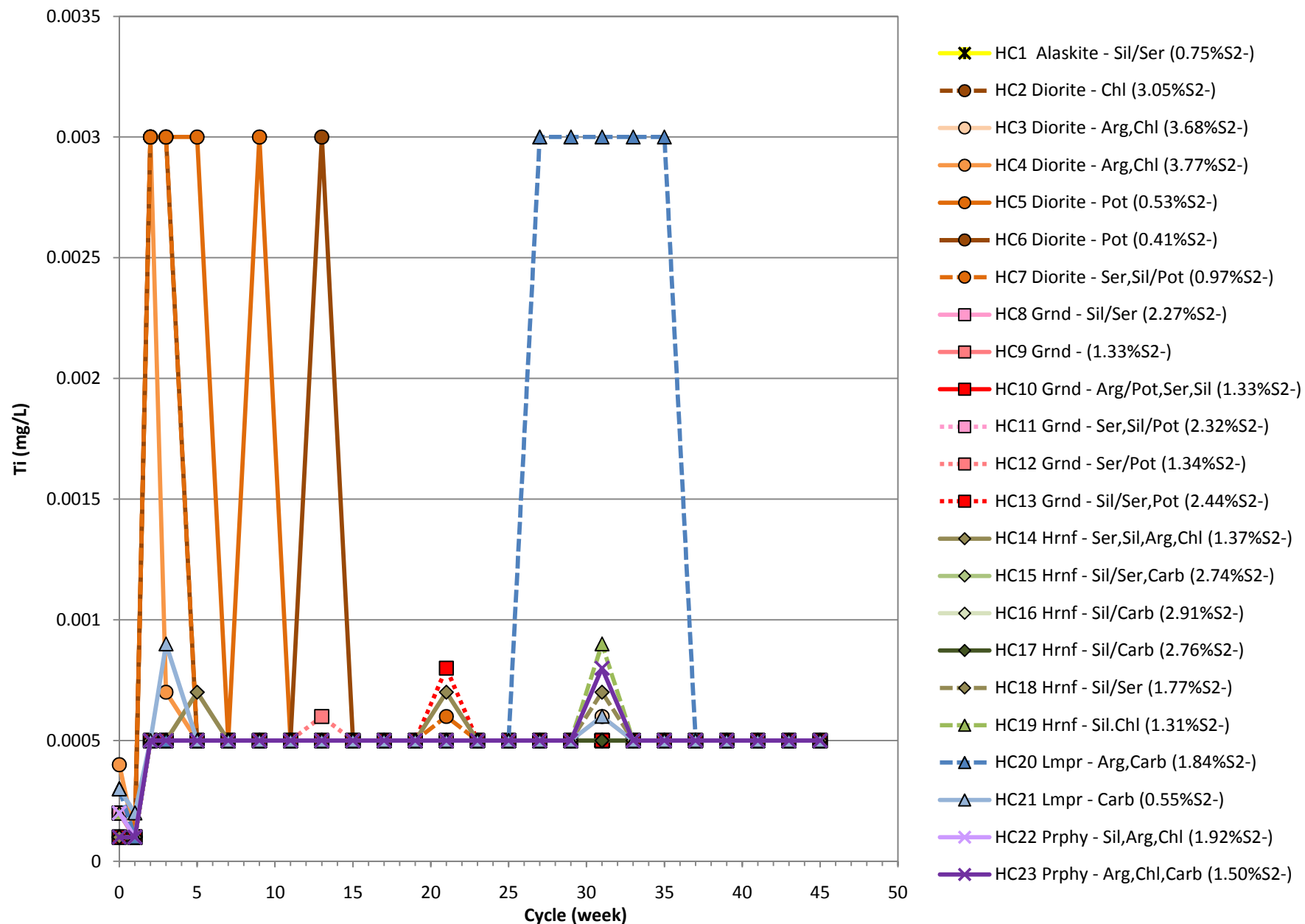
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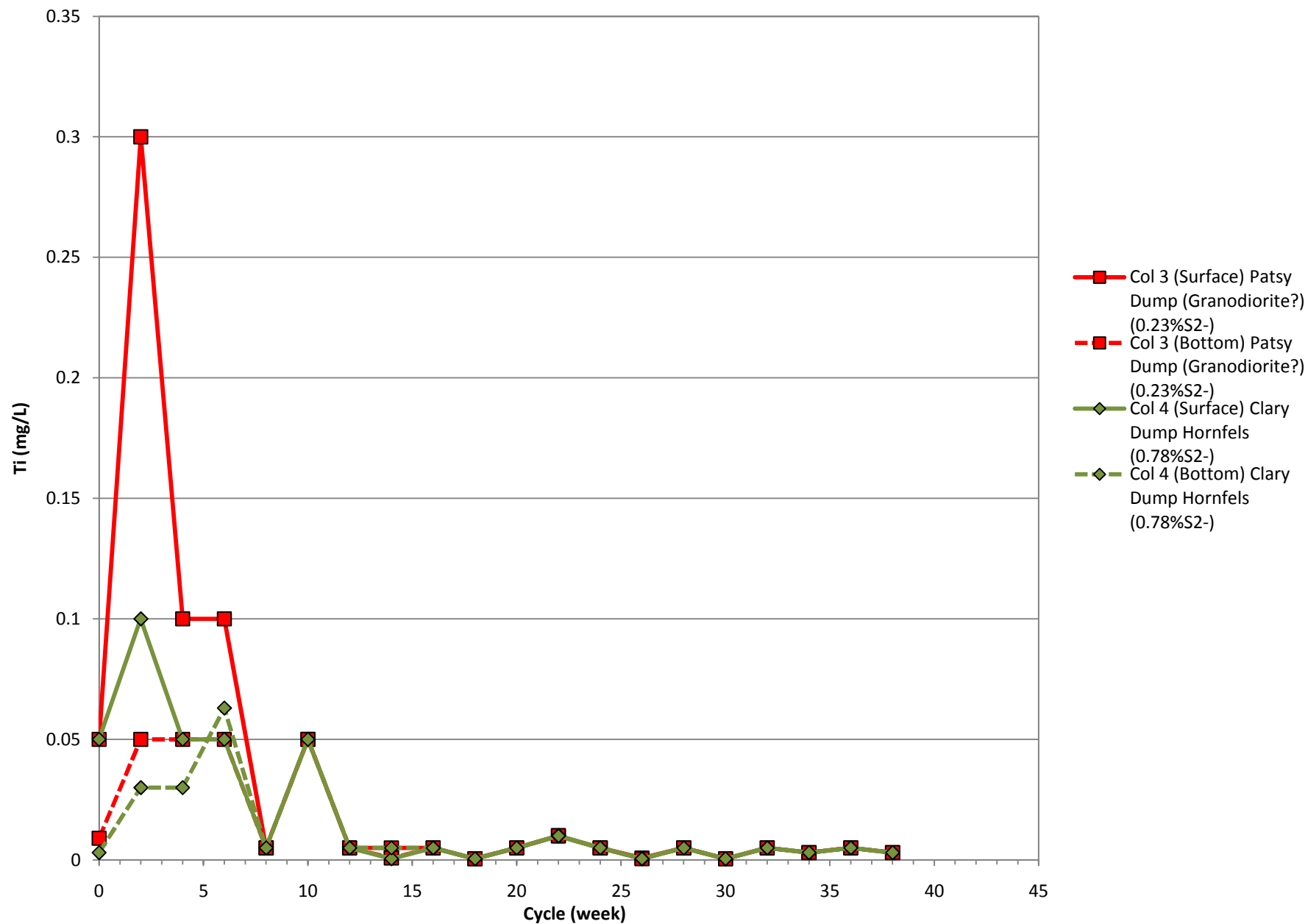
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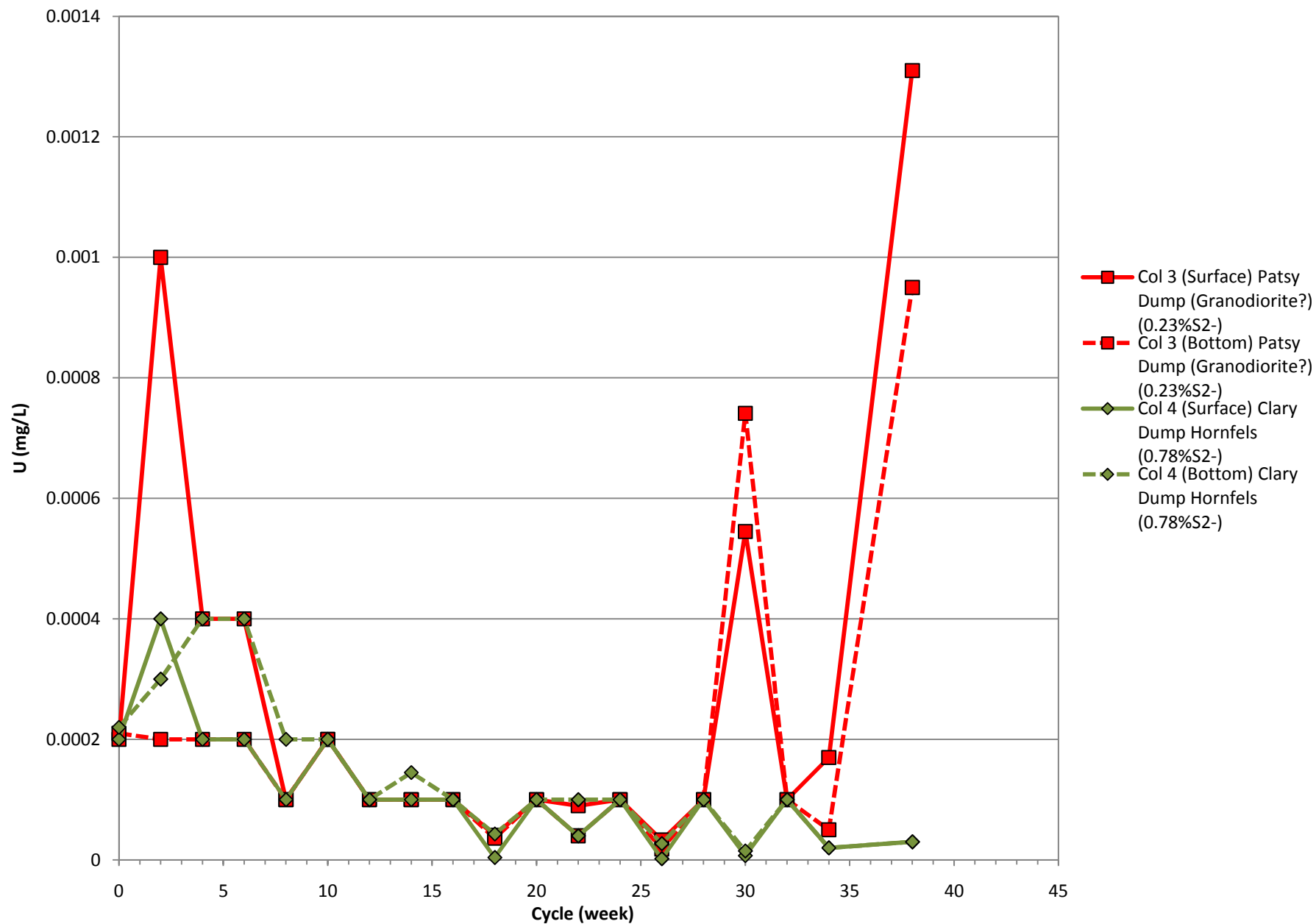
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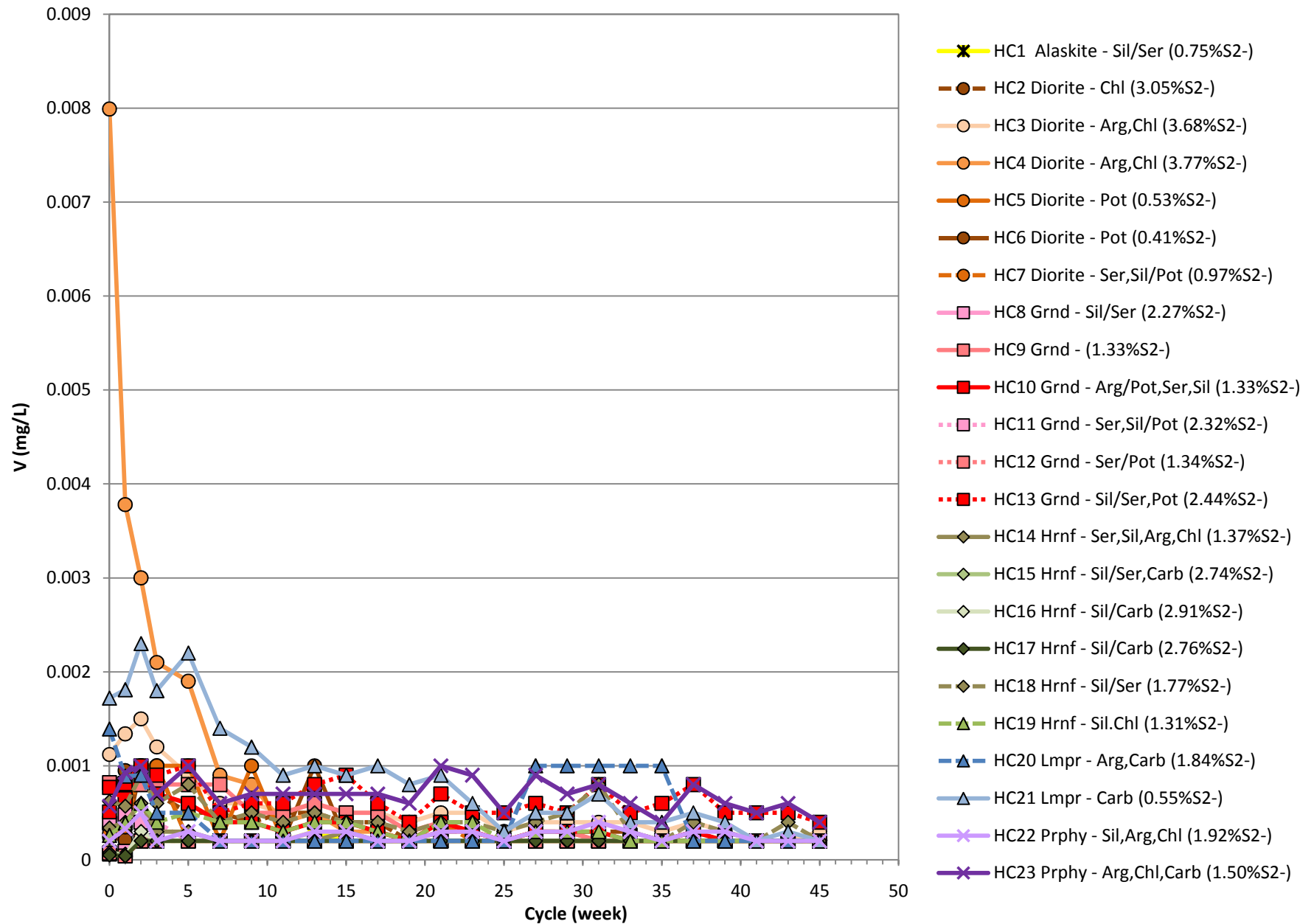
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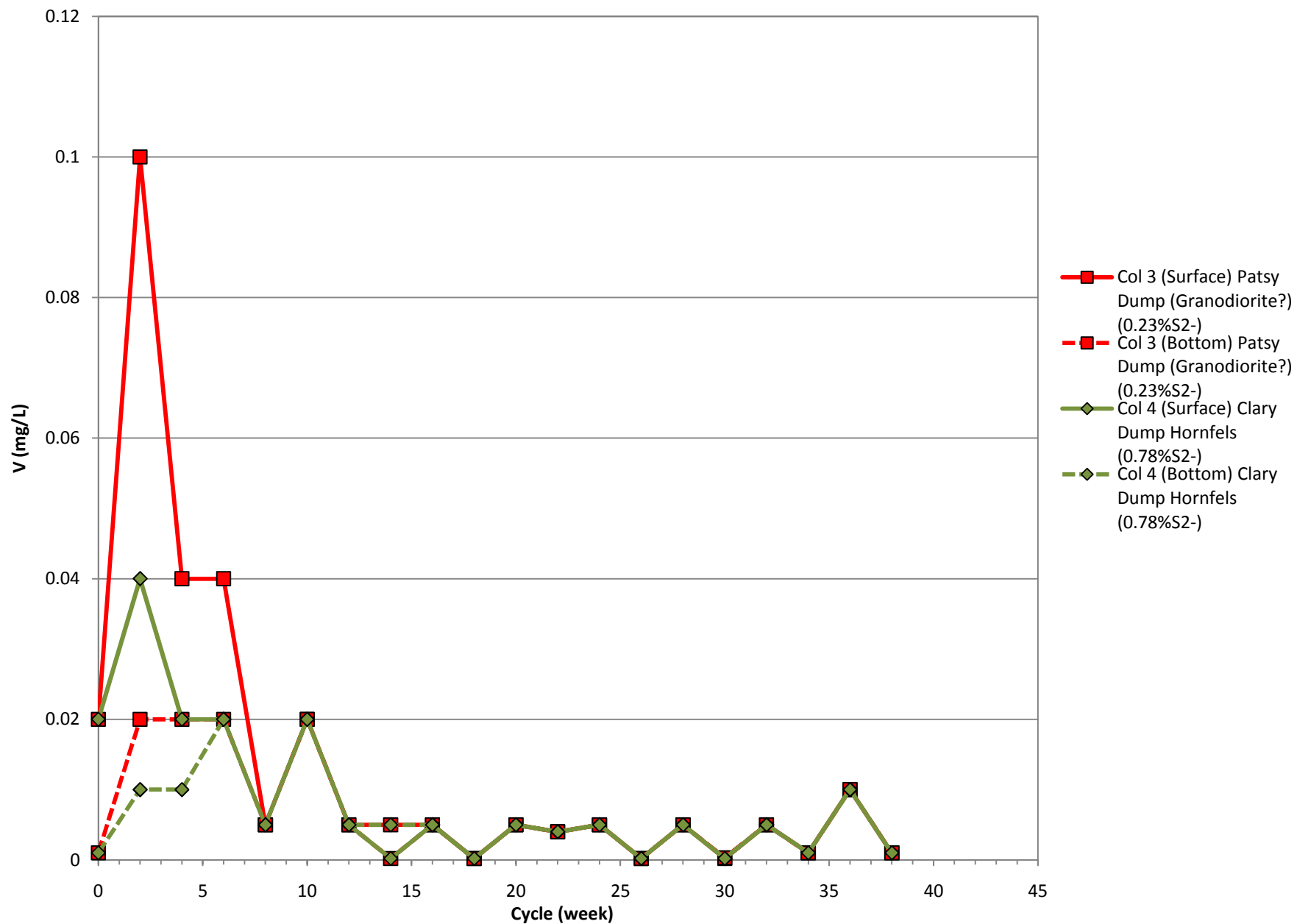
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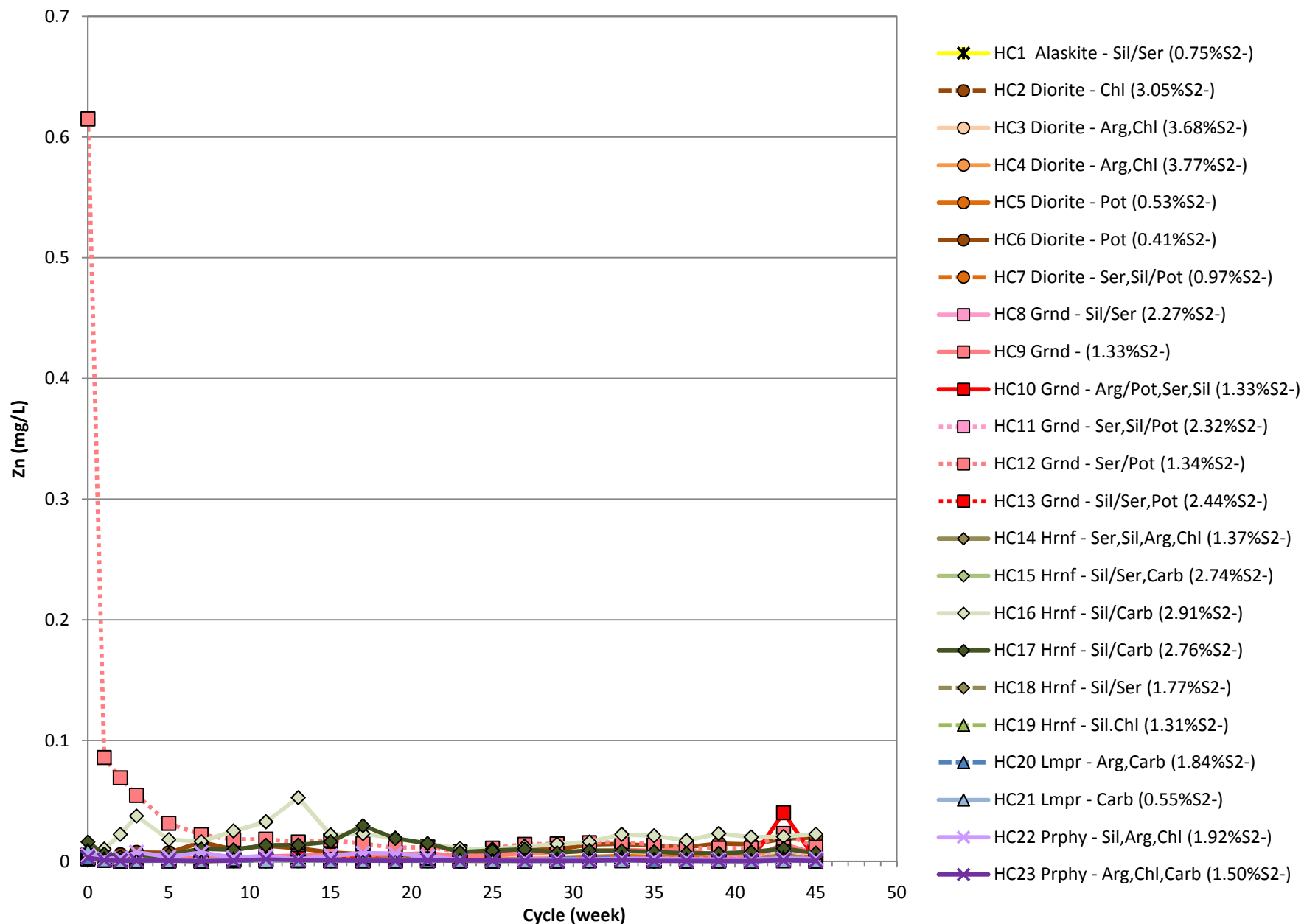
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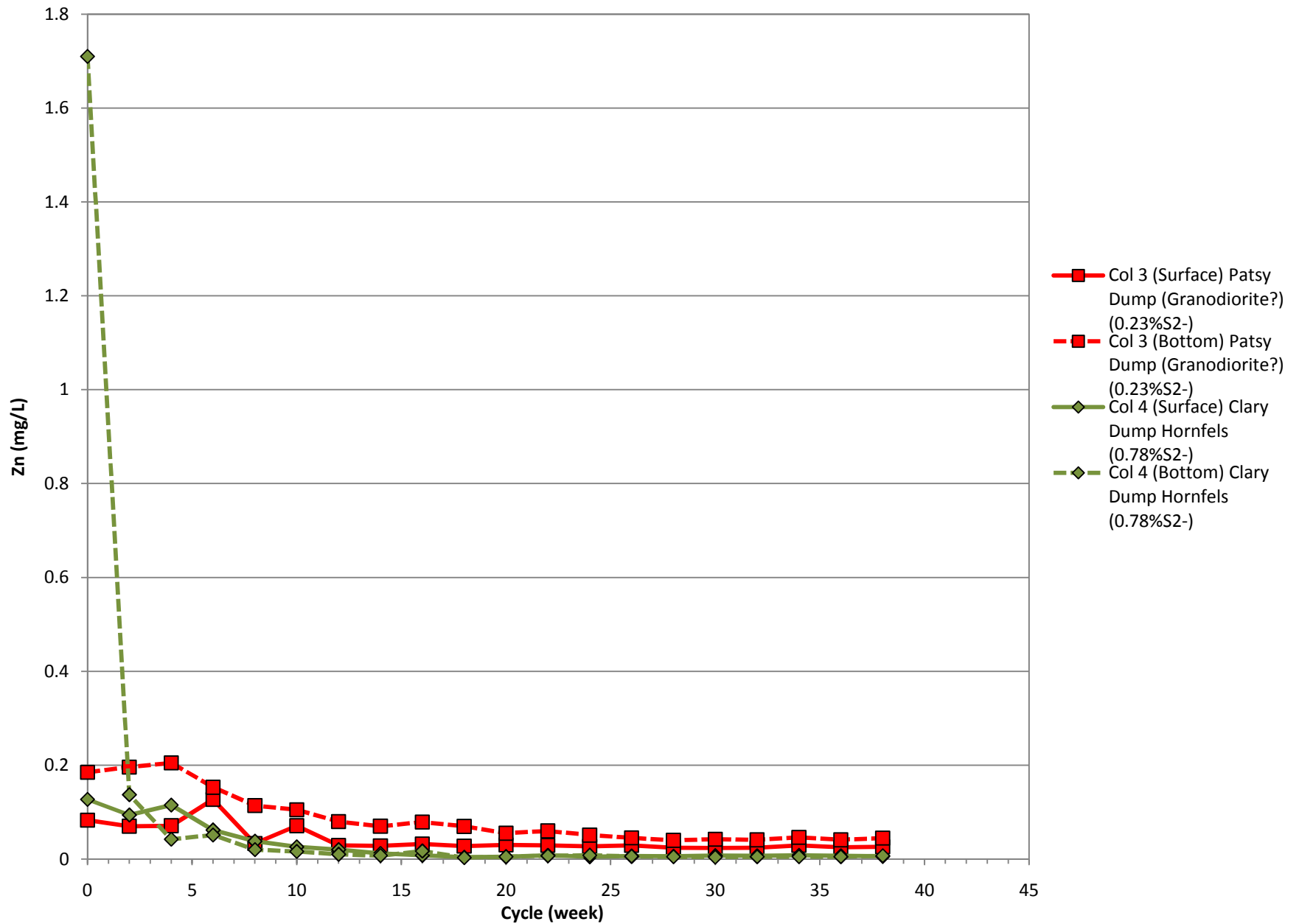
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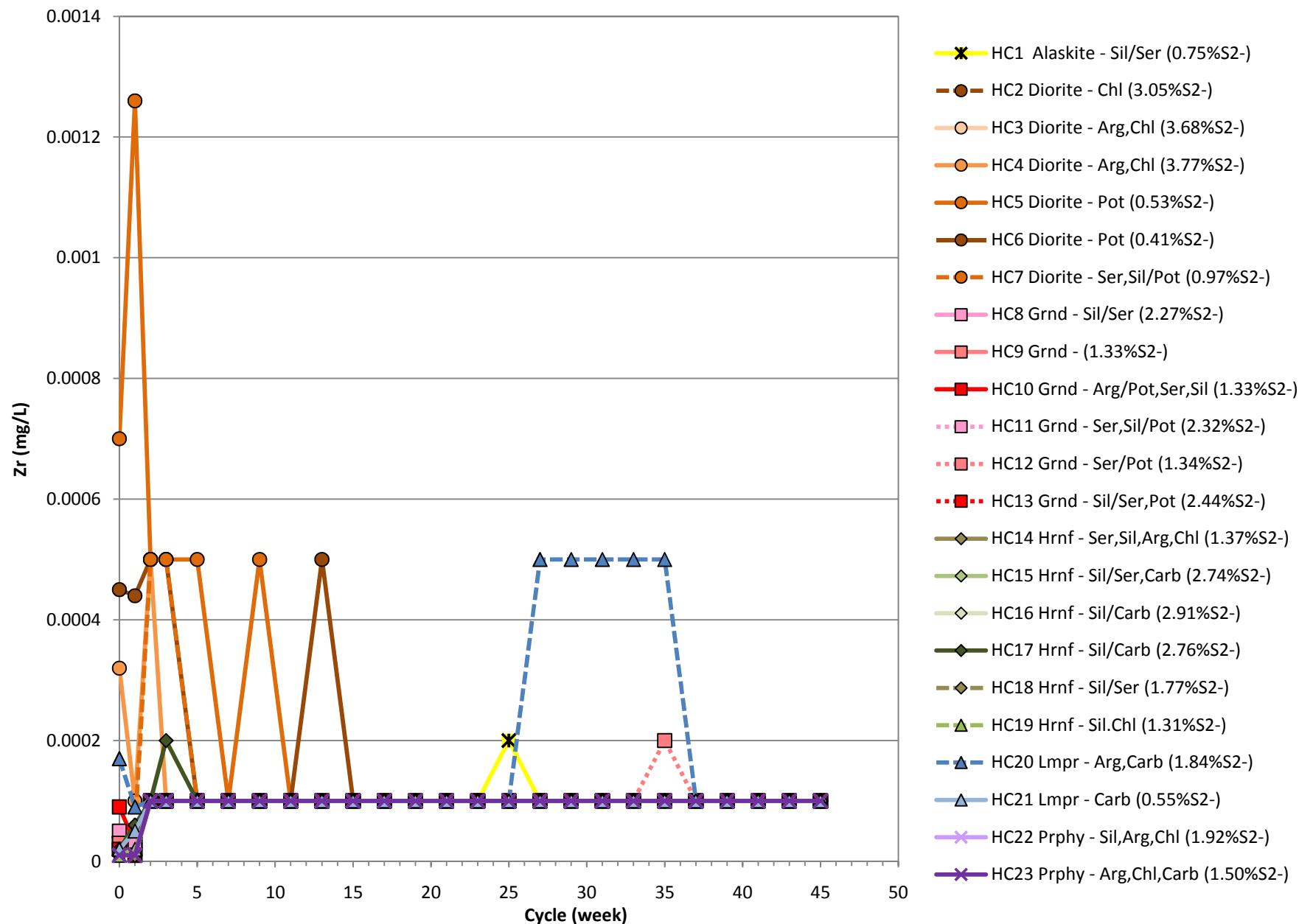
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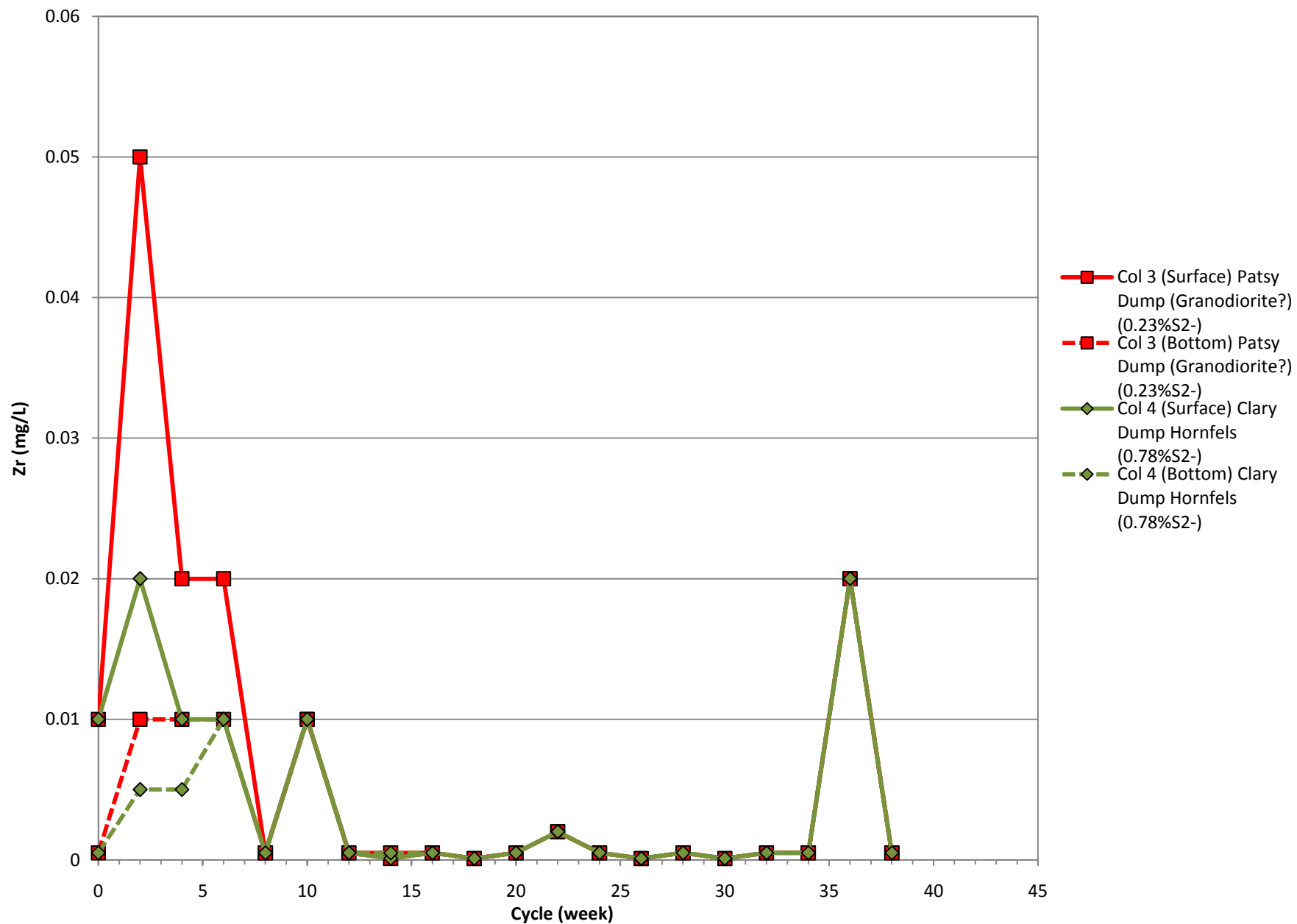
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Rock\WR Test program\Kinetic Test Program\Kinetic



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Rock\WR Test program\Kinetic Test Program\Kinetic



C:\Users\Shannon\Documents\Projects\pH009-02 SRK_Kitsault\Characterization\Waste
 Rock\WR Test program\Kinetic Test Program\Kinetic

Apr 12, 26 and May 10/10 Ca 33.8, 21.8 and 24.7. Repeat due to poor ion balance. Repeat = 10.8, 9.88 and 24.7, respectively. Suspect sample mixup or contamination in May 10/10 sample.
June 21/10 As 0.0053. Repeat = 0.0002
June 7/10 Ni 0.00342. Repeat =
Aug 30/10 Cr 0.0006, repeat = 0.0008. Confirmed.

Apr 12, 26 and May 10/10 Ca 18.0, 12.4 and 15.4. Repeat due to poor ion balance
May 10/10 P 0.221. Repeat = 0.221, confirmed, Suspect contamination.
Aug 30/10 Sulphate 20. Repeat 16 mg/L.
Aug 30/10 Cr 0.0004, repeat = 0.0006. Confirmed.

Apr 12, 26 and May 10/10 Ca 14.7, 10.7 and 11.7. Repeat due to poor ion balance.
 Aug 30/10 Ca 21.9. Repeat = 24.4. Suspect contamination.
 Aug 30/10 Fe 0.095. Repeat = 0.095 confirmed. Suspect contamination.
 Aug 30/10 Cr 0.0006. Repeat = 0.0006 confirmed.
 Aug 30/10 Al 0.0839. Repeat = 0.136. Average value entered.

Aug 30/10 Cr 0.0005. Repeat = 0.0007. Confirmed.

Aug 30/10 Cr 0.0004. Repeat = 0.0007. Confirmed

Jan 25/10 Cl 17. Sample discarded, suspect contamination.
May 24/10 sulphate 36. Repeat = 48.
May 24/10 Ni 0.0241. Repeat = 0.00026
Aug 30/10 Cr 0.0005 Repeat = 0.0007. Confirmed.

Apr 12 and May 10/10 Ca 26.5 and 22.8. Repeat due to poor ion balance.

Aug 30/10 Cr 0.0006 Repeat = 0.0009. Confirmed.

Aug 30/10 Cr 0.0007. Repeat = 0.0007 confirmed

Aug 30/10 Cr 0.0004. Repeat = 0.0006. Confirmed

Feb 1/10 P 8.2 and K 14.6. Repeat P 7.46 and K 13.5, confirmed. Suspect contamination.
Aug 30/10 Ag 0.000597. Repeat = 0.000544
Aug 30/10 Cr 0.001. Repeat = 0.0015. Confirmed.

June 7/10 Fe 0.039, P 1.71. Repeat = Fe=0.041, P=1.89. Suspect contamination.
Aug 30/10 Cr 0.0005. Repeat = 0.0007. Confirmed.

May 10/10 P 0.038. Fe 0.018. Repeat = P 0.038, Fe 0.018. Confirmed. Suspect P contamination.
Aug 30/10 Cr 0.0004. Repeat = 0.0006. Confirmed.

May 10/10 Fe 0.021. Repeat = Fe 0.021 Confirmed
May 24/10 sulphate 15. Repeat 22.
May 10/10 Ni 0.0231. Repeat

Aug 30/10 Cr 0.0005. Repeat = 0.0007, confirmed.

Aug 30/10 Cr 0.0005. Repeat = 0.0007, confirmed.

May 10/10 Ca 22.7. Repeat due to poor ion balance. Repeat = 13

Aug 30/10 Cr 0.0005. Repeat = 0.0007. Confirmed.

Aug 30/10 Cr 0.0011. Repeat = 0.0013. Confirmed.

Sample = K08-02 204-207

DRAFT

Maxam ID	Jpb #	Major Anions	Major Cations	Diff	Diff %
		8.07	7.78	-0.30	-1.9%
		2.95	2.30	-0.65	-12.4%
		2.49	3.56	1.07	17.7%
		2.10	3.26	1.16	21.6%
		1.67	2.43	0.76	18.6%
		1.58	2.64	1.05	25.0%
		1.35	1.83	0.48	15.0%
		1.32	1.82	0.50	16.0%
	B023815 Revised	1.14	0.89	-0.25	-12.2%
		1.27	1.04	-0.23	-9.9%
		1.27	1.07	-0.20	-8.4%
	B036795	1.25	1.15	-0.09	-4.0%
	B042937	1.31	1.28	-0.03	-1.2%
	B052815	1.47	1.49	0.02	0.8%
	B054140	1.70	1.71	0.01	0.4%
	B061004	2.74	2.48	-0.26	-5.0%
	B066440	3.45	3.03	-0.42	-6.5%
	B072508	4.58	4.32	-0.26	-2.9%
	B081033	4.87	3.79	-1.08	-12.5%
	B087078	2.50	2.00	-0.50	-11.0%
	B093809	1.55	1.37	-0.18	-6.1%
	B098572	1.54	1.24	-0.30	-11.0%
	B0A3864	1.97	1.76	-0.22	-5.9%
Y32936	BOA9591	2.14	1.70	-0.44	-11.5%
Y61949	BOB4289				

eAvanti Kinetic Testing (Dec 14 10)

Aug 30/10 Cr 0.0007. Repeat = 0.0007 confirmed

Aug 30/10 Cr 0.0007. Repeat = 0.0007 confirmed

May 24/10 Sulphate 16. Repeat = 17.
May 24/10 Ca 20.1, Repeat = 20.1 confirmed
July 19/10 P 0.019. Repeat = 0.018. Confirmed. Suspect contamination.

May 24/10 Ca 20.1 Sample discarded. Cannot repeat.
 July 19/10 P 0.019. Repeat = 0.0018, confirmed. Suspect contamination.
 Aug 30/10 Hg 0.03. Repeat = -0.01
 Aug 30/10 Cr 0.0009. Repeat = 0.0013

May 24/10 Sulphate 16. Repeat = 17.
May 24/10 Ca 20.1, Repeat = 20.1 confirmed
July 19/10 P 0.019. Repeat = 0.018. Confirmed. Suspect contamination.

3-Mar-

3-Mar-10 0 390 160

-0.5

0.8

Mar 3/10 B, Ca, Mg, K and Na repeated at lower detection limit. Completed.
Mar 31/10 Pb 0.195. Sample discarded not repeated.
Sept 1/10 Fe 0.324. Repeat = 0.339, confirmed. Suspect contamination.
Sept 15/10 Ti <0.001. Transcription error.
Nov 17, 2010 conductivity value 317. suspect instrument error, not repeated, sample was already discarded

Col 3

Sample = Patsy Dump 01 (Bottom)

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[illegible]

Sept 15/10 TI <0.001. Transcription error.

Sample 3 Clary Dump 08 (Surface)																																																											
Date	Cycle	Input	Output	pH	ORP	Cond.	Acidity (pH 4.5) mgCaCO3/L	Acidity (pH 8.3) mgCaCO3/L	Alkalinity mgCaCO3/L	Dissolved Oxygen mg/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness CaCO3 mg/L	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mn	Li	Mg	Hg	Mo	Ni	P	K	Se	Si	Ag	Na	Sr	S	Ti	Sn	Tl	U	V	Zn	Zr	Method	Maxxam ID	Job #	Major Anions	Major Cations	Diff	Diff %			
3-Mar-10	0	290	160	5.24	231	31	#N/A	5.5	0.4	6.57	10	-0.5	0.04	6.5	0.089	-0.002	-0.002	0.012	-0.001	-0.0005	-0.05	0.0011	1.8	-0.01	0.0063	0.007	10.8	0.0368	-0.05	0.5	0.833	-1	-0.005	0.012	-0.2	0.4	-0.004	-10	-0.0005	-0.1	0.01	-5	-0.0002	0.208	-0.05	-0.0002	-0.02	0.127	-0.01	ICP MS		B014308 Revised	0.22	0.48	0.26	37.8%			
10-Mar-10	1	195	100	5.45	335	52	#N/A	5.0	1.7	8.20	19	-0.5	0.06	-0.5	0.078	-0.004	-0.004	0.005	-0.002	-0.001	-10	0.002	9	-0.02	0.008	-0.001	0.305	0.001	-0.1	-2	1.59	-2	-0.01	0.02	-0.4	-2	-0.008	-20	-0.001	-2	0.022	-400	-0.0004	0.371	-0.1	-0.0004	-0.04	0.094	-0.02	0.43	0.48	0.05	5.9%						
17-Mar-10	2	365	160	6.02	234	70	#N/A	5.0	1.2	8.06	19	-0.5	0.06	-0.5	0.078	-0.004	-0.004	0.005	-0.002	-0.001	-10	0.002	9	-0.02	0.008	-0.001	0.305	0.001	-0.1	-2	1.59	-2	-0.01	0.02	-0.4	-2	-0.008	-20	-0.001	-2	0.022	-400	-0.0004	0.371	-0.1	-0.0004	-0.04	0.094	-0.02	0.43	0.48	0.05	5.9%						
24-Mar-10	3	145	50	6.02	234	70	#N/A	5.0	1.2	8.06	19	-0.5	0.06	-0.5	0.078	-0.004	-0.004	0.005	-0.002	-0.001	-10	0.002	9	-0.02	0.008	-0.001	0.305	0.001	-0.1	-2	1.59	-2	-0.01	0.02	-0.4	-2	-0.008	-20	-0.001	-2	0.022	-400	-0.0004	0.371	-0.1	-0.0004	-0.04	0.094	-0.02	0.43	0.48	0.05	5.9%						
31-Mar-10	4	355	160	6.24	183	78	#N/A	4.7	3.7	9.50	41	-0.5	0.35	36.5	-0.02	-0.002	-0.002	0.014	-0.001	-0.0005	-5	0.0024	12	-0.01	0.0093	-0.005	0.2301	0.012	-0.5	-5	1.86	-1	-0.005	0.011	-0.2	-5	-0.004	-10	-0.0005	-5	0.027	-1000	-0.0002	0.415	-0.05	-0.0002	-0.02	0.115	-0.01	0.92	0.62	-0.30	-19.1%						
7-Apr-10	5	150	50	6.50	150	88	#N/A	4.5	6.8	9.64	39	-0.5	0.29	28	-0.02	-0.002	-0.002	0.006	-0.001	-0.0005	-5	0.0013	11	-0.01	0.0077	-0.005	-0.1	-0.0005	-0.05	-5	2.07	-1	-0.005	0.013	-0.2	-5	-0.004	-10	0.0006	-5	0.035	-1000	-0.0002	0.455	-0.05	-0.0002	-0.02	0.062	-0.01	0.95	0.55	-0.39	-26.3%						
14-Apr-10	6	190	165	6.67	128	88	#N/A	4.5	6.8	9.64	39	-0.5	0.29	28	-0.02	-0.002	-0.002	0.006	-0.001	-0.0005	-5	0.0013	11	-0.01	0.0077	-0.005	-0.1	-0.0005	-0.05	-5	2.07	-1	-0.005	0.013	-0.2	-5	-0.004	-10	0.0006	-5	0.035	-1000	-0.0002	0.455	-0.05	-0.0002	-0.02	0.062	-0.01	0.95	0.55	-0.39	-26.3%						
21-Apr-10	7	105	50	6.79	93	95	#N/A	4.5	6.8	9.64	39	-0.5	0.29	28	-0.02	-0.002	-0.002	0.006	-0.001	-0.0005	-5	0.0013	11	-0.01	0.0077	-0.005	-0.1	-0.0005	-0.05	-5	2.07	-1	-0.005	0.013	-0.2	-5	-0.004	-10	0.0006	-5	0.035	-1000	-0.0002	0.455	-0.05	-0.0002	-0.02	0.062	-0.01	0.95	0.55	-0.39	-26.3%						
28-Apr-10	8	365	165	6.72	103	103	#N/A	2.6	8.7	9.16	34	-0.5	0.14	39.5	0.01	-0.0005	0.0001	0.007	-0.0001	-0.001	-0.05	0.00047	13.6	-0.001	0.0056	0.0002	0.006	-0.0002	#N/A	1.37	2.13	#N/A	-0.001	0.008	-0.01	1.27	-0.0001	0.629	-0.00002	0.52	0.039	14	-0.00005	0.518	-0.005	-0.0001	-0.005	0.038	-0.0005	0.88	0.69	-0.19	-12.3%						
5-May-10	9	165	50	6.74	117	97	#N/A	2.7	9.5	8.85	29	-0.5	0.26	34.8	0.041	-0.002	-0.002	0.008	-0.001	-0.0005	-5	-0.0005	14	-0.01	0.0039	-0.005	-0.1	-0.0005	-0.05	-5	1.88	-1	0.006	0.008	-0.2	-5	-0.004	-10	-0.0005	-5	0.048	-1000	-0.0002	0.558	-0.05	-0.0002	-0.02	0.026	-0.01	0.79	0.70	-0.09	-5.9%						
12-May-10	10	440	170	6.80	134	105	#N/A	4.9	11.7	8.85	16	-0.5	0.23	33.6	0.003	-0.0005	0.0001	0.009	-0.0001	-0.001	-0.05	0.00011	11.7	-0.001	0.003	0.0004	-0.005	-0.0002	#N/A	1.06	1.82	#N/A	-0.001	0.005	-0.01	1.15	-0.0001	0.693	-0.00002	0.41	0.036	9	-0.00005	0.57	-0.0001	-0.005	0.02	-0.005	0.005	0.69	0.70	-0.09	-5.9%						
2-May-10	11	350	60	6.84	124	94	#N/A	4.9	11.7	8.85	16	-0.5	0.23	33.6	0.003	-0.0005	0.0001	0.009	-0.0001	-0.001	-0.05	0.00011	11.7	-0.001	0.003	0.0004	-0.005	-0.0002	#N/A	1.06	1.82	#N/A	-0.001	0.005	-0.01	1.15	-0.0001	0.693	-0.00002	0.41	0.036	9	-0.00005	0.57	-0.0001	-0.005	0.02	-0.005	0.005	0.69	0.70	-0.09	-5.9%						
2-Jun-10	13	165	50	6.86	122	93	#N/A	3.7	12.4	8.52	19	-0.5	0.28	34.3	0.0053	-0.0005	0.00007	0.00978	-0.00001	-0.001	-0.05	0.00006	12.1	-0.001	0.00266	0.0003	0.004	-0.0002	0.0008	1	1.9	0.01	-0.001	0.00413	-0.01	1.2	0.00004	0.857	0.000007	0.38	0.0407	-20	0.00001	0.554	-0.0005	-0.0001	-0.0002	0.012	-0.0001	ICP MS		B047658 Revised B052804	0.64	0.61	-0.03	-2.3%			
9-Jun-10	14	355	160	6.89	135	94	#N/A	3.7	12.4	8.52	19	-0.5	0.28	34.3	0.0053	-0.0005	0.00007	0.00978	-0.00001	-0.001	-0.05	0.00006	12.1	-0.001	0.00266	0.0003	0.004	-0.0002	0.0008	1	1.9	0.01	-0.001	0.00413	-0.01	1.2	0.00004	0.857	0.000007	0.38	0.0407	-20	0.00001	0.554	-0.0005	-0.0001	-0.0002	0.012	-0.0001	ICP MS		B047658 Revised B052804	0.64	0.61	-0.03	-2.3%			
16-Jun-10	15	115	50	6.95	109	88	#N/A	2.9	14.1	8.70	17	-0.5	0.32	35	0.009	-0.0005	0.0001	0.011	-0.0001	-0.001	-0.05	0.00004	12.4	-0.001	0.0019	0.0025	-0.005	-0.0002	#N/A	1	1.77	#N/A	-0.001	0.003	0.01	1.21	-0.0001	0.956	-0.00002	0.42	0.038	8	-0.00005	0.506	-0.005	-0.0001	-0.005	0.008	-0.0005	ICP DES		B057192 Revised B061579	0.61	0.61	0.00	0.0%			
23-Jun-10	16	350	165	7.04	356	88	#N/A	2.9	14.1	8.70	17	-0.5	0.32	35	0.009	-0.0005	0.0001	0.011	-0.0001	-0.001	-0.05	0.00004	12.4	-0.001	0.0019	0.0025	-0.005	-0.0002	#N/A	1	1.77	#N/A	-0.001	0.003	0.01	1.21	-0.0001	0.956	-0.00002	0.42	0.038	8	-0.00005	0.506	-0.005	-0.0001	-0.005	0.008	-0.0005	ICP DES		B057192 Revised B061579	0.61	0.61	0.00	0.0%			
30-Jun-10	17	190	55	7.02	387	85	#N/A	4.1	14.8	8.88	15	-0.5	0.41	33.8	0.004	0.00002	0.00008	0.0102	-0.00001	-0.000005	-0.05	0.000052	12	-0.0001	0.00158	0.0014	0.002	0.000072	0.0006	0.9	1.63	-0.01	0.00054	0.00271	-0.0002	1.2	-0.00004	1.03	-0.000005	0.4	0.0401	-20	0.000011	0.495	-0.0005	0.000004	-0.0002	0.0042	-0.0001	ICP MS		B057192 Revised B061579	0.61	0.61	0.00	0.0%			
7-Jul-10	18	365	160	6.86	138	89	#N/A	4.1	14.8	8.88	15	-0.5	0.41	33.8	0.004	0.00002	0.00008	0.0102	-0.00001	-0.000005	-0.05	0.000052	12	-0.0001	0.00158	0.0014	0.002	0.000072	0.0006	0.9	1.63	-0.01	0.00054	0.00271	-0.0002	1.2	-0.00004	1.03	-0.000005	0.4	0.0401	-20	0.000011	0.495	-0.0005	0.000004	-0.0002	0.0042	-0.0001	ICP MS		B057192 Revised B061579	0.61	0.61	0.00	0.0%			
14-Jul-10	19	140	55	6.91	130	85	#N/A	5.1	16.3	8.84	20	-0.5	0.6	34.1	0.006	-0.0005	-0.0001	0.01	-0.0001	-0.001	-0.05	0.00003	12.1	-0.001	0.0009	0.0004	-0.005	-0.0002	#N/A	0.97	1.71	#N/A	-0.001	0.002	-0.01	1.29	-0.0001	1.01	-0.00002	0.37	0.038	10	-0.00005	0.541	-0.005	-0.0001	-0.005	-0.005	-0.0005	ICP DES		B057192 Revised B061579	0.61	0.61	0.04	3.2%			
21-Jul-10	20	360	165	6.97	121	89	#N/A	5.1	16.3	8.84	20	-0.5	0.6	34.1	0.006	-0.0005	-0.0001	0.01	-0.0001	-0.001	-0.05	0.00003	12.1	-0.001	0.0009	0.0004	-0.005	-0.0002	#N/A	0.97	1.71	#N/A	-0.001	0.002	-0.01	1.29	-0.0001	1.01	-0.00002	0.37	0.038	10	-0.00005	0.541	-0.005	-0.0001	-0.005	-0.005	-0.0005	ICP DES		B057192 Revised B061579	0.61	0.61	0.04	3.2%			
28-Jul-10	21	135	65	7.01	113	87	#N/A	5.6	15.0	8.92	12	-0.5	0.6	34.1	0.008	-0.0004	-0.0004	0.0131	-0.0002	-0.0001	-1	-0.0001	12	-0.002	0.0008	0.001	-0.02	-0.0001	-0.01	-1	1.73	-0.2	0.01	0.0049	-0.04	1	-0.0008	-2	-0.0001	-1	0.047	-200	-0.00004	0.548	-0.01	-0.00004	-0.004	0.008	-0.002	ICP MS		B070538	0.65	0.61	-0.05	-3.6%			
4-Aug-10	22	350	165	7.12	373	89	#N/A	5.6	15.0	8.92	12	-0.5	0.6	34.1	0.008	-0.0004	-0.0004	0.0131	-0.0002	-0.0001	-1	-0.0001	12	-0.002	0.0008	0.001	-0.02	-0.0001	-0.01	-1	1.73	-0.2	0.01	0.0049	-0.04	1	-0.0008	-2	-0.0001	-1	0.047	-200	-0.00004	0.548	-0.01	-0.00004	-0.004	0.008	-0.002	ICP MS		B070538	0.65	0.61	-0.05	-3.6%			
11-Aug-10	23	200	55	7.22	352	86	#N/A	5.9	16.4	8.98	19	-0.6	0.38	34.1	0.007	-0.0005	0.0001	0.014	-0.0001	-0.001	-0.05	0.00005	12.2	-0.001	0.001	0.0005	-0.005	-0.0002	#N/A	0.86	1.72	#N/A	-0.001	0.002	-0.01	1.2	-0.0001	1.19	-0.00002	0.37	0.045	9	-0.00005	0.52	-0.005	-0.0001	-0.005	-0.005	-0.0005	ICP DES		B075301	0.72	0.74	0.01	0.8%			
18-Aug-10	24	350	170	7.15	357	87	#N/A																																																				

Mar 3/10 B, Ca, Mg, K and Na being repeated at lower detection limit.
Leaked over the weekend of June 26,27,2010
Mar 31 and April 14 Sulphate 39 and 34, respectively. Not repeated, samples discarded.
Sept 15/10 TI <0.001. Transcription error.

[illegible]

Mar 31/10 Entire scan being repeated. Hardness was 36,000.
Revised value entered, 719
July 7/10 Alkalinity missed.
June 23/10 P 0.785. Repeat = 0.829, confirmed. Suspect contamination.
Sept 15/10 TI <0.001. Transcription error.

Appendix G: Static Characterization Results for Tailings

**QUANTITATIVE PHASE ANALYSIS OF TWO POWDER SAMPLES USING THE
RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.**

(Project: 0935 Avanti Mining – Kisault - PO# 42046)

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January 19, 2010

EXPERIMENTAL METHOD

The two samples of **Project 0935 Avanti Mining – Kisault** were reduced to the optimum grain-size range for quantitative X-ray analysis ($<10\ \mu\text{m}$) by grinding under ethanol in a vibratory McCrone Micronising Mill for 7 minutes. Step-scan X-ray powder-diffraction data were collected over a range $3\text{--}80^\circ 2\theta$ with CoK α radiation on a Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe monochromator foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6° .

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 and Search-Match software by Siemens (Bruker). X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 – 2.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	Ideal Formula	Avanti Master	Avanti Whole Master
Quartz	SiO ₂	37.6	37.4
Muscovite	KAl ₂ AlSi ₃ O ₁₀ (OH) ₂	5.3	5.4
Biotite	K(Mg,Fe) ₃ (AlSi ₃ O ₁₀)(OH) ₂	3.3	3.0
Plagioclase	NaAlSi ₃ O ₈ – CaAl ₂ Si ₂ O ₈	17.5	17.3
K-Feldspar	KAlSi ₃ O ₈	27.1	27.2
Calcite	CaCO ₃	3.2	3.3
Ankerite/Dolomite	Ca(Fe ²⁺ ,Mg,Mn)(CO ₃) ₂ / CaMg(CO ₃) ₂	1.5	1.7
Pyrite	FeS ₂	3.1	2.9
Kaolinite ?	Al ₂ Si ₂ O ₅ (OH) ₄	1.4	1.7
Molybdenite	MoS ₂	0.1	
Total		100.0	100.0

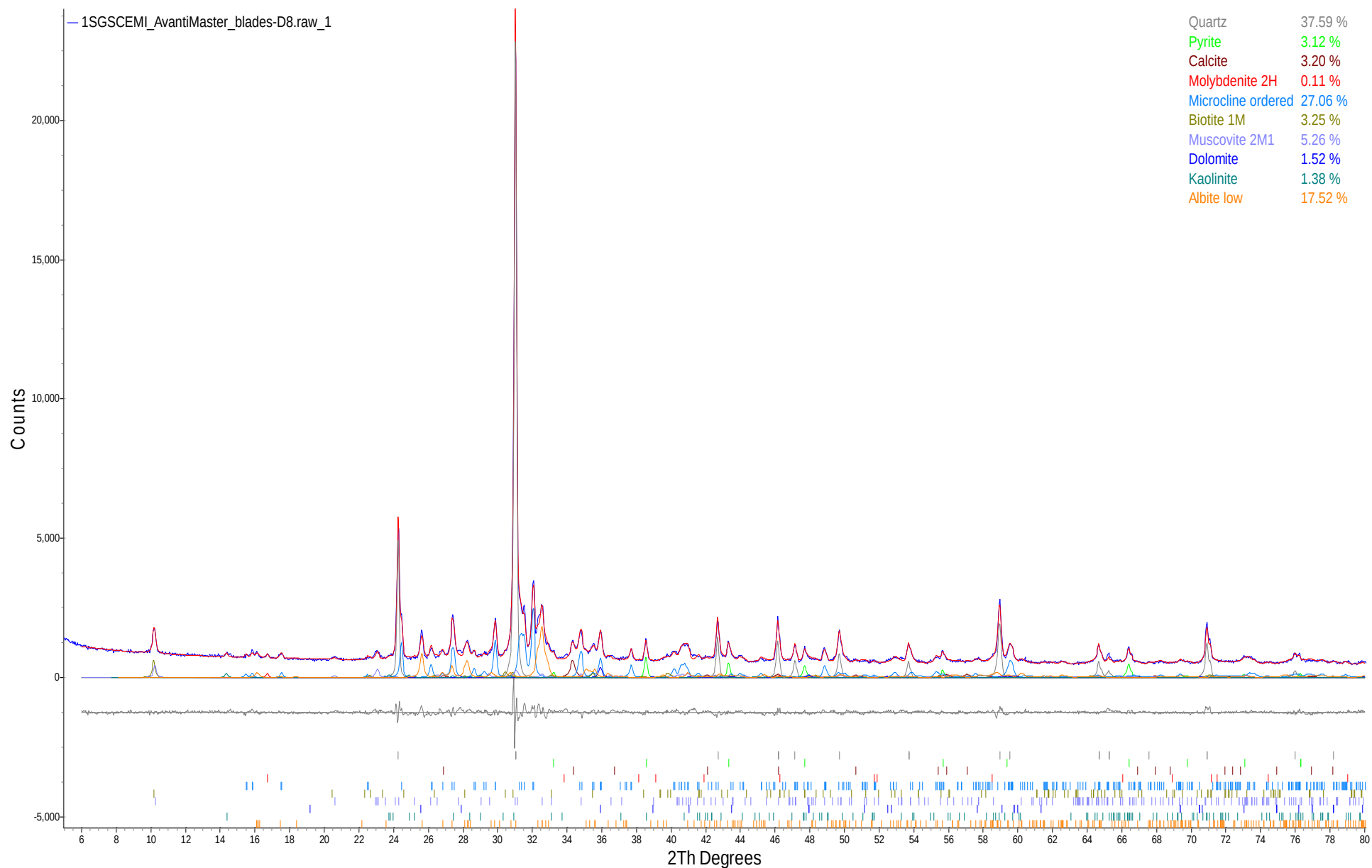


Figure 1. Rietveld refinement plot of sample **SGS CEMI “Avanti Master”** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

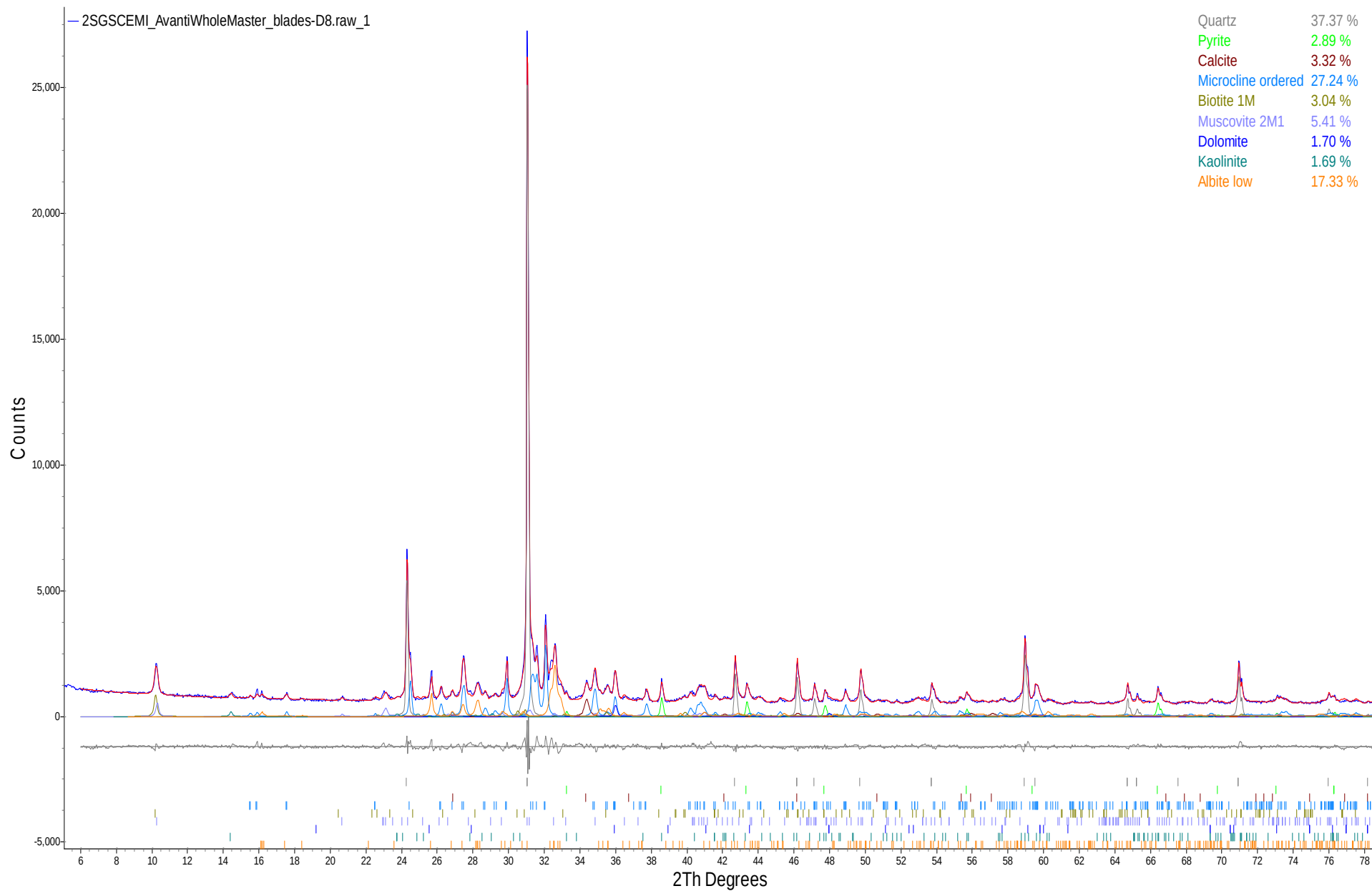


Figure 2. Rietveld refinement plot of sample **SGS CEMI “Avanti Whole Master”** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

**QUANTITATIVE PHASE ANALYSIS OF THREE POWDER SAMPLES USING THE
RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.**

(Project: 0935 Avanti Mining – PO# 42180)

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July 15, 2010

EXPERIMENTAL METHOD

The three samples of **Project: 0935 Avanti Mining** were reduced to the optimum grain-size range for quantitative X-ray analysis ($<10\ \mu\text{m}$) by grinding under ethanol in a vibratory McCrone Micronising Mill for 7 minutes. Step-scan X-ray powder-diffraction data were collected over a range $3\text{--}80^\circ 2\theta$ with CoK α radiation on a Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe monochromator foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6° .

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 using Search-Match software by Siemens (Bruker). X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 – 3.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	Ideal Formula	Rougher Tails (RST)	De-pyritized Cycloned RST Underflow	De-pyritized Cycloned RST Overflow
Quartz	SiO ₂	36.4	39.8	37.9
Muscovite	KAl ₂ AlSi ₃ O ₁₀ (OH) ₂	7.4	8.0	7.8
Biotite	K(Mg,Fe) ₃ (AlSi ₃ O ₁₀)(OH) ₂	3.1	2.4	3.2
Clinochlore	(Mg,Fe ²⁺) ₅ Al(Si ₃ Al)O ₁₀ (OH) ₈	2.6	1.9	2.7
K-Feldspar	KAlSi ₃ O ₈	26.0	25.6	25.4
Plagioclase	NaAlSi ₃ O ₈ – CaAl ₂ Si ₂ O ₈	15.9	16.6	17.4
Calcite	CaCO ₃	3.0	2.5	2.8
Dolomite	CaMg(CO ₃) ₂	1.9	2.0	1.6
Siderite	Fe ²⁺ CO ₃	0.5	0.5	0.4
Pyrite	FeS ₂	2.8	0.3	0.4
Witherite ?	BaCO ₃	0.4	0.4	0.3
Total		100.0	100.0	100.0

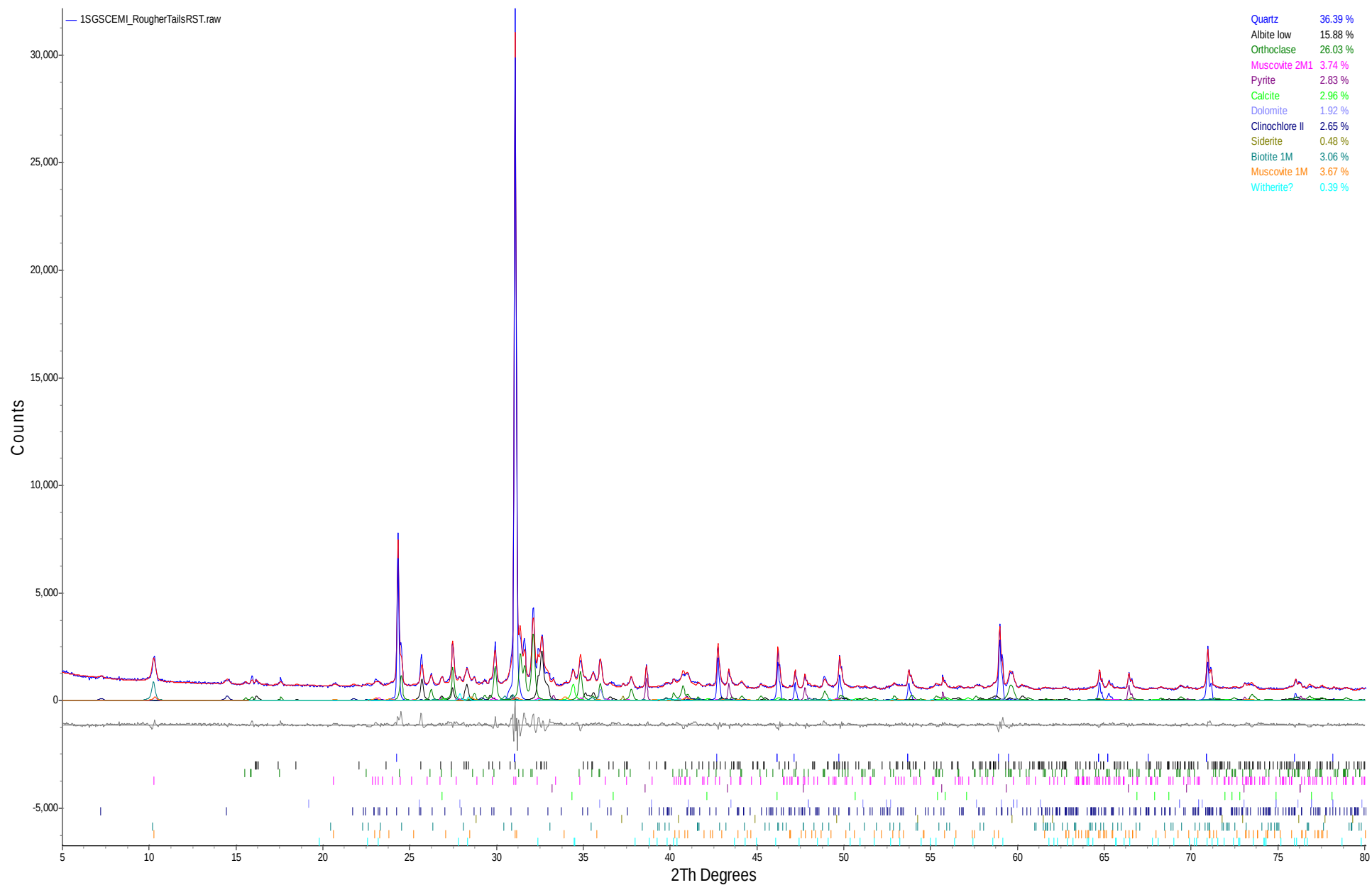


Figure 1. Rietveld refinement plot of sample **SGS CEMI “Rougher Tails (RST)”** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

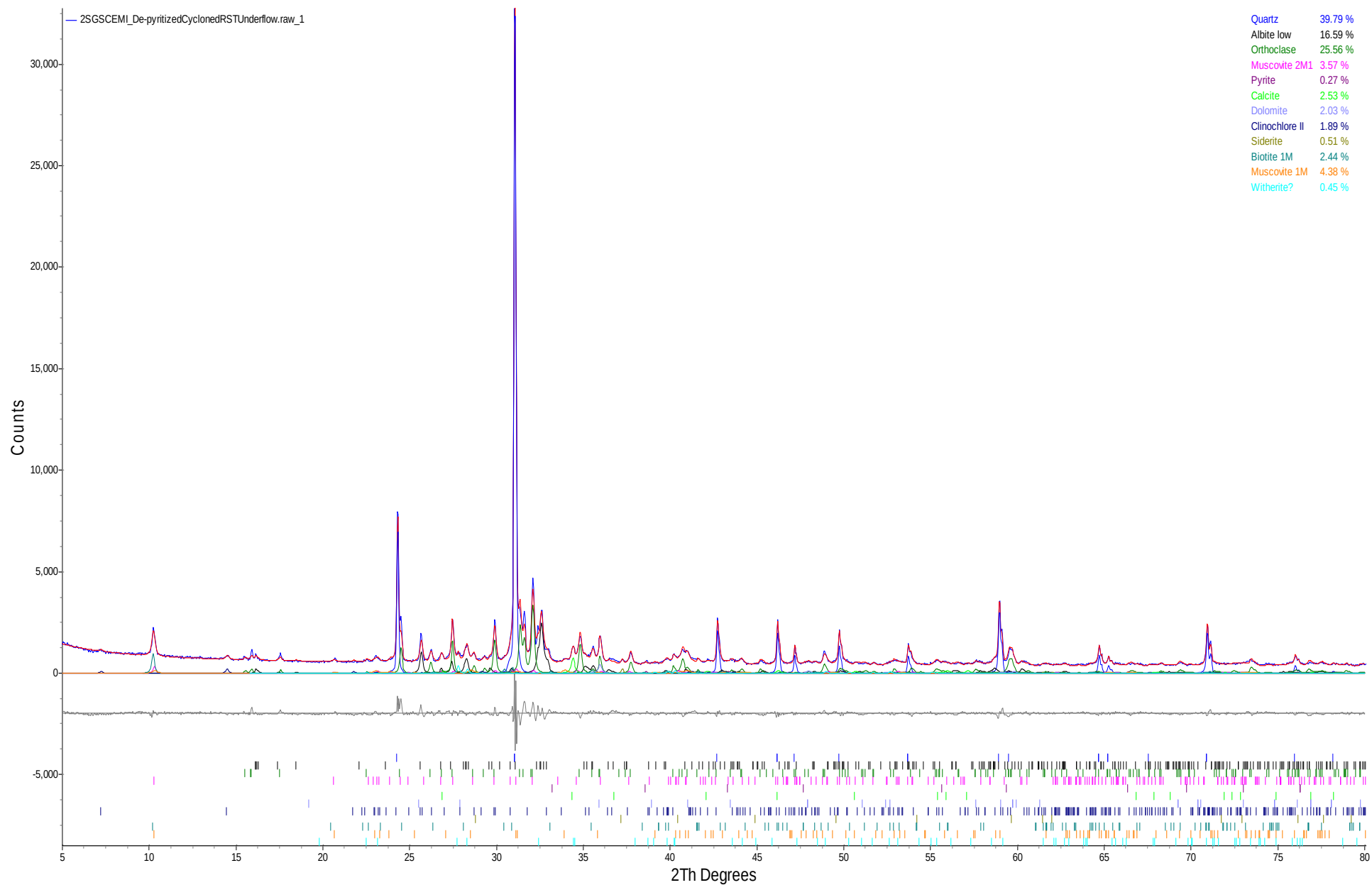


Figure 2. Rietveld refinement plot of sample **SGS CEMI “De-pyritized Cycloned RST Underflow”** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

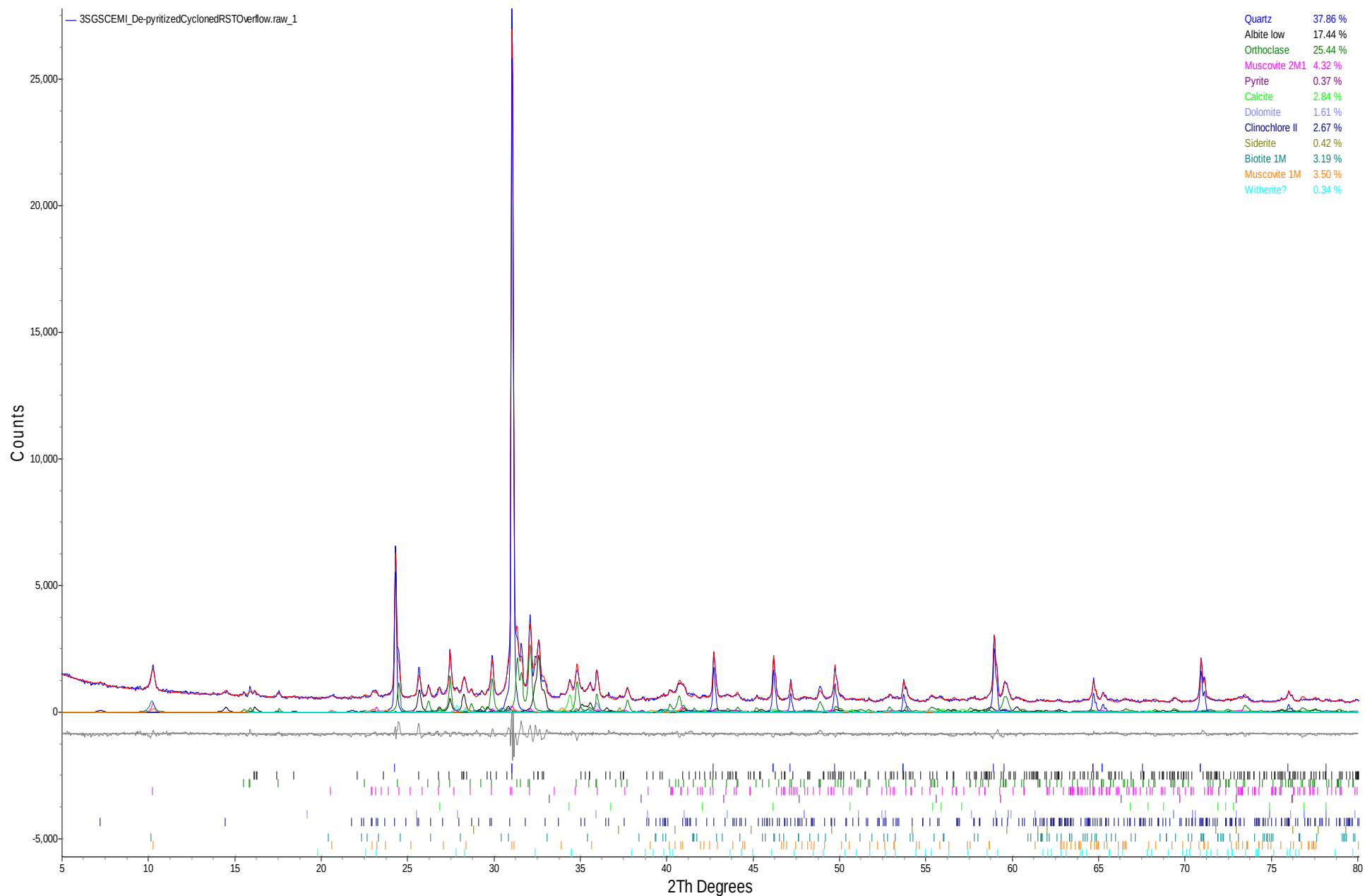


Figure 3. Rietveld refinement plot of sample **SGS CEMI “De-pyritized Cycloned RST Overflow”** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

Appendix G2. Kitsault Ore & Tailings Acid-Base Accounting Testwork (ABA)

			Acid Potentials				Neutralization Potentials							
Sample ID	Test Phase	Paste pH	S(T)	S(SO4)	S(S-2)	AP	Fizz Test	Modified NP	Adjusted NP	TIC	CaCO3 NP	Net NP _{adj}	NP _{adj} /AP	ABA Classification
		Std Units	%	%	%	kgCaCO3/t	Visual	kgCaCO3/t	kgCaCO3/t	%	kgCaCO3/t	kgCaCO3/t		
Ore Composite Feed Samples														
Diorite Composite	1	8.20	1.90	0.18	1.72	53.8	Moderate	41.9	36.9	0.51	42.5	-16.9	0.69	PAG
Hornfels Composite	1	8.51	1.23	0.04	1.19	37.2	Moderate	35.8	30.8	0.47	39.2	-6.4	0.83	PAG
Quartz Monzonite Composite	1	8.41	1.48	0.05	1.43	44.7	Moderate	43.4	38.4	0.52	43.3	-6.3	0.86	PAG
Avanti Master Comp. Ore	4	8.14	1.58	0.06	1.52	47.5	Moderate	42.3	37.3	0.51	42.5	-10.2	0.79	PAG
Concentrates														
Pyrite Rougher Con	2	7.57	34.7	0.03	34.67	1083.4	Moderate	26.2	21.2	0.3	25.0	-1062.2	0.02	PAG
Sulphide Rougher Con	2	7.88	27.5	0.03	27.47	858.4	Moderate	34	29	0.4	33.3	-829.4	0.03	PAG
Tailings														
Diorite Whole Ro Tails Whole Sample	1	7.87	1.80	0.06	1.74	54.4	Slight	37.3	32.3	0.45	37.5	-22.1	0.59	PAG
Diorite Whole Ro Tails +100	1	7.84	1.41	0.05	1.36	42.5	Slight	30.1	25.1	0.38	31.7	-17.4	0.59	PAG
Diorite Whole Ro Tails +100 -200	1	7.69	2.64	0.05	2.59	80.9	Moderate	32.9	27.9	0.41	34.2	-53.0	0.34	PAG
Diorite Whole Ro Tails -200	1	7.65	1.93	0.08	1.85	57.8	Moderate	52.3	47.3	0.61	50.8	-10.5	0.82	PAG
Hornfels Whole Ro Tails Whole Sample	1	8.17	1.22	0.03	1.19	37.2	Slight	32.6	27.6	0.42	35.0	-9.6	0.74	PAG
Hornfels Whole Ro Tails +100	1	8.35	0.81	0.03	0.78	24.4	Slight	30.5	25.5	0.35	29.2	1.1	1.05	UC
Hornfels Whole Ro Tails +100 -200	1	8.19	2.09	0.02	2.07	64.7	Moderate	31.8	26.8	0.41	34.2	-37.9	0.41	PAG
Hornfels Whole Ro Tails -200	1	7.93	1.15	0.03	1.12	35.0	Slight	35.0	30	0.37	30.8	-5.0	0.86	PAG
Quartz Monzonite Whole Ro Tails Whole Sample	1	8.21	1.48	0.04	1.44	45.0	Slight	41.4	36.4	0.49	40.8	-8.6	0.81	PAG
Quartz Monzonite Whole Ro Tails +100	1	8.26	1.17	0.04	1.13	35.3	Moderate	38.4	33.4	0.46	38.3	-1.9	0.95	PAG
Quartz Monzonite Whole Ro Tails +100 -200	1	8.22	2.31	0.03	2.28	71.3	Moderate	34.9	29.9	0.45	37.5	-41.4	0.42	PAG
Quartz Monzonite Whole Ro Tails -200	1	7.97	1.49	0.06	1.43	44.7	Moderate	52.8	47.8	0.72	60.0	3.1	1.07	UC
Pyrite Rougher Tails	2	8.58	0.26	0.02	0.24	7.5	Moderate	41.2	36.2	0.51	42.5	28.7	4.83	NON-PAG
Sulphide Rougher Tails	2	8.64	0.22	0.01	0.21	6.6	Moderate	42.7	37.7	0.51	42.5	31.1	5.74	NON-PAG
Whole Tailings Master Composite	3	8.50	1.57	0.03	1.54	48.1	Moderate	37.9	32.9	0.47	39.2	-15.2	0.68	PAG
Avanti Whole Master Comp. Tailings	4	8.26	1.50	0.03	1.47	45.9	Moderate	41.0	36	0.5	41.7	-9.9	0.78	PAG
Avanti Whole Master Comp. (+100 mesh) Tailings	4	8.17	1.19	0.02	1.17	36.6	Moderate	37.7	32.7	0.46	38.3	-3.9	0.89	PAG
Cycloned Rougher Tails (RST)	5	8.37	1.45	0.02	1.43	44.7	Slight	40.6	35.6	0.49	40.8	-9.1	0.80	PAG
Cycloned Rougher Tails (RST) +100 mesh	5	8.42	1.36	0.02	1.34	41.9	Slight	36.5	31.5	0.43	35.8	-10.4	0.75	PAG
Cyclone Overflow/Underflow														
De-pyritized Cycloned RST Overflow	5	8.26	0.08	0.01	0.07	2.2	Slight	42.6	37.6	0.49	40.8	35.4	17.19	NON-PAG
De-pyritized Cycloned RST Underflow	5	8.60	0.06	0.01	0.06	1.9	Slight	39.3	34.3	0.46	38.3	32.4	18.29	NON-PAG

Notes:

Brown italics = less than detection limit, detection limit shown.

Total sulphur = HCL Leach; S(SO4) = sulphate sulphur; S(S-2) = sulphide sulphur.

AP = Acid potential in kg CaCO3 equivalent per tonne of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO4).

Modified Sobek NP = Modified Sobek Neutralization potential (Lawrence & Wang, 1997) in kg CaCO3 equivalent per tonne of material.

TIC = Total Inorganic Carbon; C(T) = Total Carbon.

CaCO3 NP = Carbonate Neutralization Potential. CaCO3 NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

Net NP = Net Neutralization Potential, NP - AP.

NPR = Neutralization Potential Ratio, NP/AP.

Appendix G3. Kitsault Ore and Tailings Trace Elements

Sample ID	Metals by Aqua Regia Digestion with ICP-MS Finish																																								
	Ag	Al	As	Au	B	Ba	Bi	Ca	Cd	Co	Cr	Cu	F	Fe	Ga	Hg	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sr	Te	Th	Ti	Tl	U	V	W	Zn		
	ppm	%	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppb	%	ppm	%	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	
10x Average Crustal Abundance for Comparison ¹	0.8	83.6	18	40	90	3900	0.082	46.6	1.6	290	1220	680	0.55	62.2	190	0.86		18.4	346	27.6	10600	12	22.7	990	1.12	130	0.34	2	250	0.5	3840		81	6.32	7.2	23	1360	12	760		
Ore Composite Feed Samples																																									
Diorite Composite	6.1	0.73	2.4	7.8	20	35	34.8	1.67	21.3	11	79	84.4		2.35	4	0.11		0.45	18	0.63	943	951.9	0.036	7.1	0.104	321	1.80	7.8	2.4	1.3	227		4.7	0.072	0.2	2.2	39	12.1	627		
Hornfels Composite	2.4	0.99	8.7	7.4	20	123	7.2	1.13	10.7	11.7	127	70.9		2.51	5	0.05		0.64	8	0.83	922	905.9	0.038	42.1	0.055	222.8	1.17	3.8	6.3	1.4	125		2.6	0.092	0.3	1.5	52	14	369		
Quartz Monzonite Composite	4.0	0.59	3.2	3.9	20	44	38.3	1.51	13.8	8.4	90	57.4		1.81	3	0.04		0.30	16	0.42	716	1063	0.027	7.2	0.081	226.5	1.37	2.3	1.7	0.9	248		6.0	0.029	0.2	2.7	23	15.2	401		
Avanti Master Comp. Ore	4.1	0.73	4.5	14.7	20	40	32.4	1.55	15.2	10.6	77	70.9	0.06	2.21	3	0.06		0.40	16	0.58	852	993.2	0.033	14.5	0.085	258.5	1.57	4.7	3.0	2.1	212		5.1	0.062	0.3	2.3	31	14.4	528		
Concentrates																																									
Pyrite Rougher Con	71.1	0.38	74.6	120	20	1	506.6	0.92	211.9	191.7	46	726.1		29.43	2	0.78		0.19	12	0.34	521	1848.6	0.008	112.9	0.039	3719.1	34.7	29	1.6	24	103		4.7	0.031	0.4	2.5	23	15.5	6188		
Sulphide Rougher Con	64.6	0.62	63.2	101	20	2	427.1	1.22	156.1	156.2	48	723.1		23.91	3	0.54		0.26	14	0.45	705	2000	0.006	98.8	0.051	3283.7	27.5	27.7	2.3	19.7	154		5.2	0.037	0.4	2.6	28	14.5	4428		
Tailings																																									
Diorite Whole Ro Tails Whole Sample	1.7	0.66	2.1	2.9	20	36	9.6	1.43	16.2	11.5	41	36.5		2.39	4	0.09		0.38	15	0.60	873	50	0.025	8.8	0.098	140.1	1.73	1.3	2.2	1.1	176		4.1	0.07	0.2	1.8	37	12.1	491		
Diorite Whole Ro Tails +100	1.4	0.56	1.9	7.3	20	67	12	1.13	11.7	8.6	41	51.6		1.93	3	0.06		0.32	13	0.49	736	50.7	0.025	7.1	0.060	103.3	1.37	1.3	2.0	0.8	116		3.7	0.064	0.1	1.5	30	4.7	384		
Diorite Whole Ro Tails +100 -200	5.4	0.56	2.3	6.3	20	32	14.4	1.22	20.6	16.2	16	39.1		2.94	3	0.09		0.36	10	0.60	794	35.2	0.016	9.5	0.081	297.1	2.48	3	2.2	1.4	144		3.2	0.068	0.1	1.4	38	15.2	605		
Diorite Whole Ro Tails -200	1.7	0.74	3.4	4.8	20	38	8.8	1.97	21.9	11.9	33	39.5		2.59	4	0.11		0.39	21	0.68	1054	51.9	0.022	12.9	0.18	145.9	1.82	1.2	2.7	1.3	279		5.7	0.071	0.3	2.5	41	20	678		
Hornfels Whole Ro Tails Whole Sample	0.6	0.87	8.4	4.5	20	160	1.9	1.06	6.6	11.5	82	37.6		2.39	4	0.02		0.55	7	0.78	947	71.6	0.027	42.6	0.056	45.4	1.07	1.4	6.0	1.2	101		2.3	0.087	0.2	1.3	47	13	252		
Hornfels Whole Ro Tails +100	0.4	0.70	5.6	2.0	20	125	1.5	0.92	3.5	7.6	67	40.3		1.86	3	0.02		0.42	6	0.68	773	84.9	0.022	33.8	0.048	37.9	0.71	1	5.2	0.9	81		2.0	0.070	0.2	1.0	41	5.3	148		
Hornfels Whole Ro Tails +100 -200	0.6	0.53	9.9	4.3	20	76	1.6	0.99	9.3	14.9	38	44.4		2.53	3	0.04		0.31	5	0.56	827	55	0.013	39.6	0.038	61.3	1.81	1.4	4.0	1.0	84		1.8	0.054	0.1	1.0	32	6.6	335		
Hornfels Whole Ro Tails -200	0.4	0.96	9.2	4.5	20	143	1.2	1.09	6.9	12	84	33.3		2.52	4	0.04		0.63	7	0.86	901	60.2	0.02	47.8	0.062	29.3	1.04	1.3	6.3	1.1	113		2.3	0.105	0.3	1.4	52	21.6	271		
Quartz Monzonite Whole Ro Tails Whole Sample	1.0	0.45	3.8	1.9	20	66	7.7	1.47	9.6	8.3	36	29.3		1.79	3	0.04		0.22	15	0.39	653	54.8	0.015	8.5	0.079	64.9	1.38	1	1.6	0.9	217		5.3	0.027	0.1	2.4	20	10.9	290		
Quartz Monzonite Whole Ro Tails +100	0.9	0.40	2.5	1.6	20	98	6.9	1.25	7.3	6.2	36	28.5		1.46	2	0.03		0.19	14	0.35	610	59.6	0.016	6.8	0.050	54.6	1.05	0.8	1.3	0.5	163		5.3	0.023	0.1	2.1	18	4	213		
Quartz Monzonite Whole Ro Tails +100 -200	2.8	0.33	6.5	3.2	20	39	25.4	1.25	11.2	12.5	12	30.6		2.43	2	0.04		0.16	13	0.37	590	38.4	0.01	7.9	0.071	174.1	2.25	1	1.3	1.3	159		4.3	0.027	0.1	1.8	20	12	356		
Quartz Monzonite Whole Ro Tails -200	0.7	0.54	5.1	1.9	20	53	7.6	1.94	13.7	8.8	34	32.3		1.93	3	0.04		0.21	20	0.48	820	54.2	0.015	11.8	0.126	56.4	1.38	1	1.7	0.8	292		6.7	0.026	0.1	3.0	24	15.6	421		
Whole Tailings Master Composite	2.4	0.59	4.4	8.1	20	136	18.1	1.40	11.7	11.2	59	52.7		2.25	3	0.04		0.33	14	0.52	795	174.1	0.021	15.6	0.079	138.3	1.53	2.4	2.7	1.0	168		4.5	0.051	0.2	2.0	27	11.4	394		
Avanti Whole Master Comp. Tailings	2.9	0.69	4.5	5.6	20	38	26.3	1.45	12.6	9.8	85	56.3	0.06	2.17	4	0.05		0.38	15	0.55	812	214.2	0.028	17.5	0.081	175.3	1.42	3	2.8	0.9	178		4.9	0.058	0.2	2.2	29	10.5	391		
Avanti Whole Master Comp. (+100 mesh) Tailings	2.6	0.62	4.0	3.1	20	52	21	1.30	10.4	7.9	79	60.5	0.05	1.89	3	0.04		0.34	14	0.51	738	242.8	0.027	15.3	0.056	163.3	1.19	3.2	2.6	0.6	155		4.4	0.054	0.2	1.9	26	6.7	327		
Rougher Tails (RST)	4.3	0.67	4.9	5.6	20	101	28.6	1.46	16.2	10.6	75	55.2	0.13	2.16	3	0.06	453	0.36	14	0.54	811	65.2	0.025	14.3	0.086	228.1	1.46	3	2.5	0.5	174	0.3	4.9	0.051	0.2	2.1	27	11.1	469		
Rougher Tails (RST) +100 mesh	2.7	0.55	3.7	4.8	20	128	18.5	1.26	11.5	9.1	70	49.5	0.10	1.96	3	0.05	325	0.32	13	0.47	729	87.5	0.026	11.3	0.065	152.9	1.37	2.5	2.3	0.4	145	0.2	4.4	0.047	0.2	1.9	24	7.2	358		
De-pyritized/de-sulphidized Tailings																																									
Pyrite Rougher Tails	0.8	0.69	1.7	1.8	20	381	6.5	1.59	5.7	4.2	74	37.1		1.28	3	0.02		0.37	17	0.59	848	116.9	0.022	15.7	0.087	53.9	0.25	1.3	2.9	0.5	190		5.0	0.060	0.2	2.3	31	10.2	206		
Sulphide Rougher Tails	0.7	0.78	1.6	1.7	20	383	5.6	1.54	7.6	4	94	33.5		1.22	4	0.03		0.40	18	0.58	835	117.2	0.03	14.5	0.089	48.6	0.20	1.1	3.2	0.5	189		5.4	0.061	0.2	2.3	31	9	239		
De-pyritized Cycloned RST Overflow	0.4	0.70	1.9	2.3	20	363	2	1.45	8.8	2.3	75	50.4	0.12	1.04	3	0.05	323	0.36	16	0.54	813	78.9	0.026	9.6	0.081	22.5	0.08	0.8	2.6	0.1	164	0.2	5.1	0.052	0.2	2.1	27	7.1	283		
De-pyritized Cycloned RST Underflow	0.3	0.60	1.7	2.3	20	332	1.2	1.40	10.5	2.1	74	33.8	0.11	0.98	3	0.04	368	0.37	15	0.54	778	63.6	0.026	8.9	0.092	14.9	0.07	0.5	2.7	0.1	139	0.2	4.4	0.058	0.2	1.9	28	11.7	342		

NOTES:
Brown italics= less than detection limit, detection limit shown.
Blue bold= greater than detection limit, detection limit shown.
¹ Average Distribution of Elements in the Earth's Crust: Crust as a Whole (Price, 1997)

Appendix G4. Net Acid Generation Tests with Analysis of NAG Liquor

Sample Weight : 2.50 g
NAG Solution : 250 mL of 17.5% H2O2 adjusted to pH 5.21 with 1N NaOH

Sample ID			Blank	Rougher Tails (RST)	De-Pyritized Cycloned RST Overflow	De-Pyritized Cycloned RST Underflow
Parameter	Method	Units				
pH	Meter		4.88	6.30	6.95	6.80
Redox	Meter	mV	393	349	303	320
Conductivity	Meter	uS/cm	284	865	330	337
Acidity (to pH 4.5)	Titration	mg CaCO3/L	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	mg CaCO3/L	2475	10.2	124.2	206.9
Alkalinity	Titration	mg CaCO3/L	25.0	9.6	67.9	72.7
Chloride		mg/L	5	6.9	5	5
Fluoride		mg/L	0.05	0.82	0.19	0.18
Sulphate	Turbidity	mg/L	6	467	31	22
Ion Balance						
Major Anions	Calc	meq/L	#N/A	10.23	4.31	4.45
Major Cations	Calc	meq/L	#N/A	9.24	3.61	3.78
Difference	Calc	meq/L	#N/A	0.99	0.69	0.66
Balance (%)	Calc	%	#N/A	5.1%	8.7%	8.1%
Dissolved Metals						
Hardness CaCO3		mg/L	16.8	306	28.4	30.7
Aluminum Al	ICP-MS	mg/L	0.03	0.0199	0.014	0.0117
Antimony Sb	ICP-MS	mg/L	0.0013	0.00809	0.00547	0.00439
Arsenic As	ICP-MS	mg/L	0.0004	0.00065	0.00508	0.0043
Barium Ba	ICP-MS	mg/L	0.0004	0.0333	0.00214	0.00261
Beryllium Be	ICP-MS	mg/L	0.0002	0.00001	0.00001	0.00001
Bismuth Bi	ICP-MS	mg/L	0.0001	0.000005	0.000005	0.000005
Boron B	ICP-MS	mg/L	1	0.05	0.05	0.05
Cadmium Cd	ICP-MS	mg/L	0.0001	0.00639	0.000414	0.000659
Calcium Ca	ICP-MS	mg/L	4	101	7.09	7.8
Chromium Cr	ICP-MS	mg/L	0.036	0.0464	0.0551	0.0544
Cobalt Co	ICP-MS	mg/L	0.0001	0.032	0.000186	0.000227
Copper Cu	ICP-MS	mg/L	0.001	0.00836	0.00619	0.00821
Iron Fe	ICP-MS	mg/L	0.02	0.004	0.004	0.004
Lead Pb	ICP-MS	mg/L	0.0001	0.000048	0.000036	0.000012
Lithium Li	ICP-MS	mg/L	0.01	0.0086	0.0068	0.0068
Magnesium Mg	ICP-MS	mg/L	1	13.4	2.59	2.72
Manganese Mn	ICP-MS	mg/L	0.001	2.22	0.0169	0.0251
Mercury Hg	ICP-MS	ug/L	0.2	0.01	0.02	0.02
Molybdenum Mo	ICP-MS	mg/L	0.003	0.579	0.822	0.656
Nickel Ni	ICP-MS	mg/L	0.0112	0.0272	0.00106	0.00148
Phosphorus P	ICP-MS	mg/L	36.8	0.716	23.7	26.1
Potassium K	ICP-MS	mg/L	1	6.74	5.51	6.03
Selenium Se	ICP-MS	mg/L	0.0008	0.00841	0.00086	0.0006
Silicon Si	ICP-MS	mg/L	2	10.2	9.3	8.57
Silver Ag	ICP-MS	mg/L	0.0001	0.000018	0.000026	0.000038
Sodium Na	ICP-MS	mg/L	67	64.7	66.8	69.3
Strontium Sr	ICP-MS	mg/L	0.016	0.964	0.111	0.104
Sulphur (S)	ICP-MS	mg/L	200	155	11	10
Thallium Tl	ICP-MS	mg/L	0.00004	0.000133	0.000137	0.000125
Tin Sn	ICP-MS	mg/L	0.533	0.00015	0.00154	0.00112
Titanium Ti	ICP-MS	mg/L	0.01	0.0005	0.0195	0.0276
Uranium U	ICP-MS	mg/L	0.00017	0.000041	0.00197	0.00218
Vanadium V	ICP-MS	mg/L	0.004	0.0044	0.0239	0.0219
Zinc Zn	ICP-MS	mg/L	0.002	0.177	0.009	0.0196
Zirconium Zr	ICP-MS	mg/L	0.002	0.0001	0.0001	0.0001

NOTES:

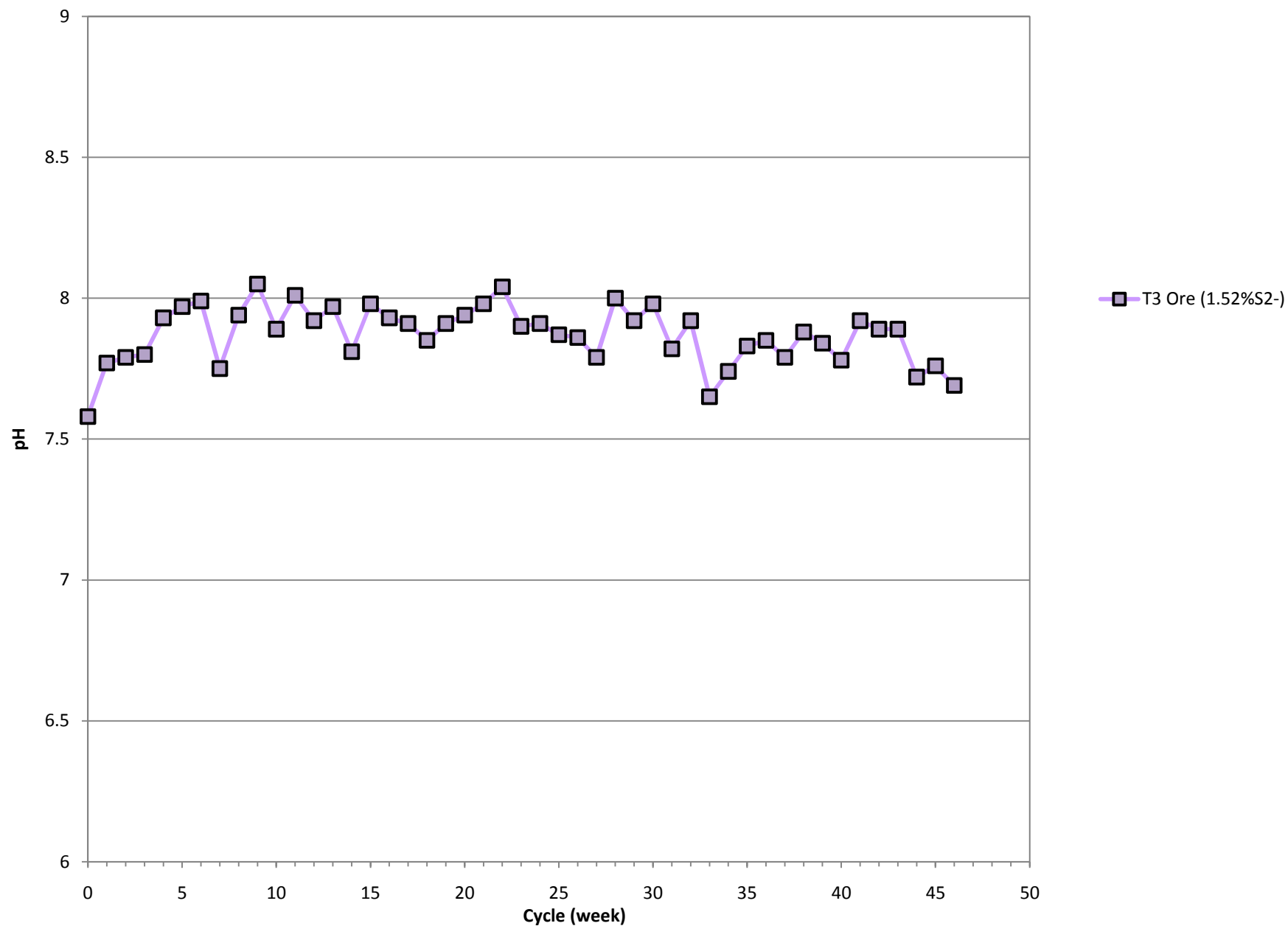
Brown italics = less than detection limit, detection limit shown.

Elevated concentrations of Cr, Ni, P, Na and Sn are noted in the blank indicating contaminant introduction with the H2O2 reagent.

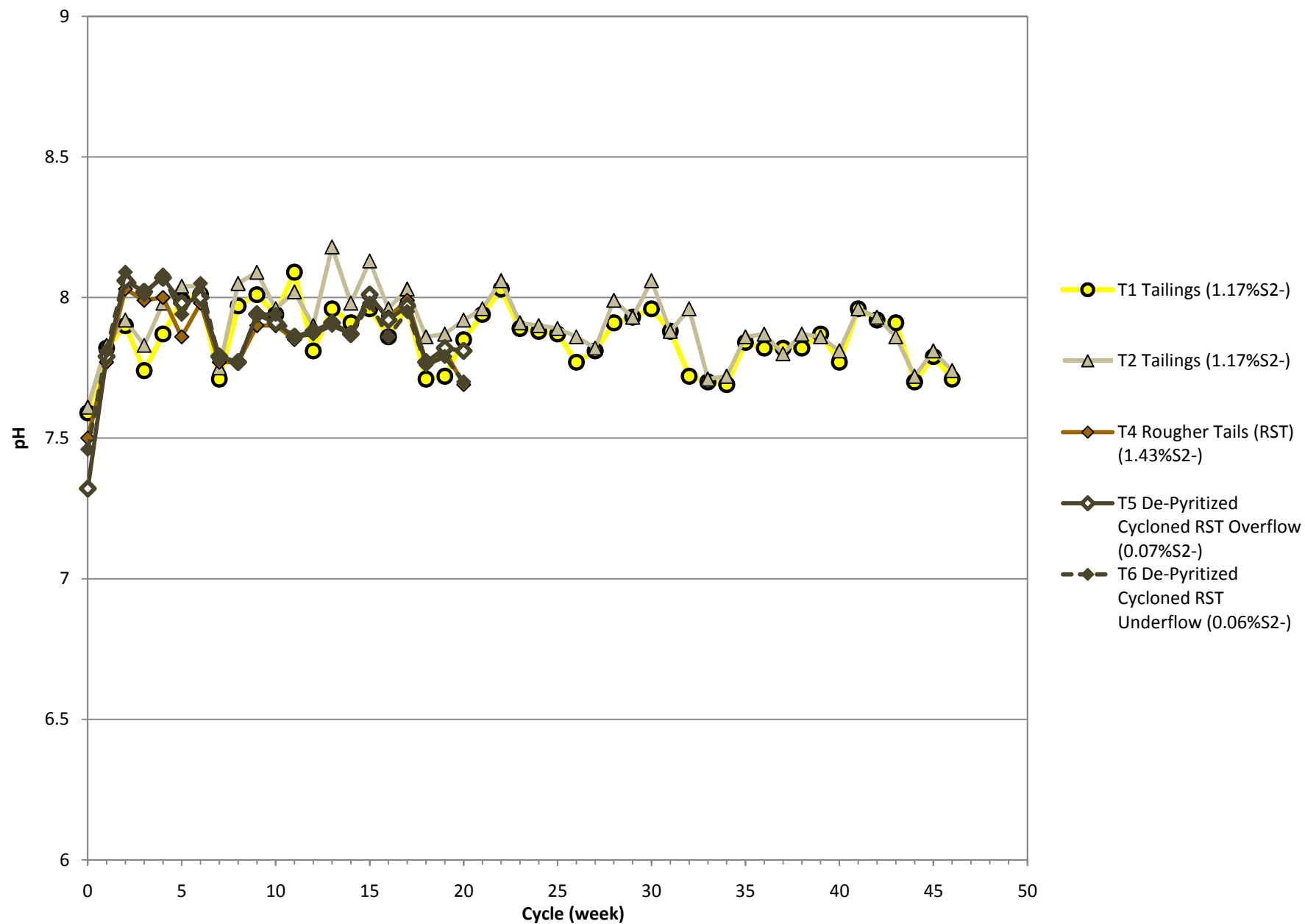
Table G5. Characterization of Supernatant Water

Sample ID			For comparison		Diorite Rougher Tails	Hornfels Rougher Tails	Qtz Monzonite Rougher Tails	Pyrite Rougher Con	Pyrite Rougher Tails	Sulphide Rougher Con	Sulphide Rougher Tails	Whole Tailings Master Composite
			MMER	BC								
			Max Grab	drinking/rec								
Parameter	Method	Units										
pH	meter			6.5 to 8.5	7.75	7.94	7.93	7.82	7.91	7.98	7.98	7.85
Redox	meter	mV			255	305	283	262	274	280	286	277
Conductivity	meter	uS/cm			1419	352	235	337	336	444	330	660
Acidity (to pH 4.5)	titration	mg CaCO3/L			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L			6.3	4.3	3.7	7.1	5.8	6.5	4.7	5.9
Alkalinity	titration	mg CaCO3/L			47.1	89.9	59.7	112.1	98.7	139.2	101.3	73.0
Chloride		mg/L			38	4	5.3	5	4.8	5	4.9	12
Fluoride		mg/L		1.5	1.53	2.38	1.74	1.63	1.76	1.87	1.71	1.73
Sulphate	Turbidity	mg/L		500	782	112	70	88	102	115	104	265
Ion Balance												
Major Anions	Calc	meq/L			18.39	4.37	2.89	4.21	4.33	5.42	4.42	7.41
Major Cations	Calc	meq/L			21.20	4.86	4.30	5.49	5.48	6.42	5.28	9.30
Difference	Calc	meq/L			-2.82	-0.49	-1.41	-1.29	-1.15	-1.00	-0.86	-1.89
Balance (%)	Calc	%			-7.1%	-5.3%	-19.6%	-13.3%	-11.8%	-8.4%	-8.9%	-11.3%
Dissolved Metals												
Hardness CaCO3		mg/L			949	170	171	234	224	269	215	373
Aluminum Al	ICP-MS	mg/L		0.1	0.0196	0.0503	0.0487	0.0293	0.0324	0.0257	0.033	0.052
Antimony Sb	ICP-MS	mg/L		0.006	0.00391	0.0208	0.00516	0.0302	0.0156	0.0328	0.0131	0.0233
Arsenic As	ICP-MS	mg/L	1.0	0.025	0.00031	0.00115	0.00035	0.00077	0.00077	0.00104	0.00064	0.0034
Barium Ba	ICP-MS	mg/L		1	0.0377	0.0929	0.141	0.126	0.106	0.0949	0.119	0.053
Beryllium Be	ICP-MS	mg/L			0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.0001
Bismuth Bi	ICP-MS	mg/L			0.000005	0.000005	0.000005	0.000017	0.000005	0.000015	0.000005	0.00005
Boron B	ICP-MS	mg/L		5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5
Cadmium Cd	ICP-MS	mg/L		0.005	0.000123	0.000101	0.000082	0.000142	0.000135	0.000318	0.000142	0.00015
Calcium Ca	ICP-MS	mg/L			350	50.7	57.2	82.4	78.1	92.5	74.6	126
Chromium Cr	ICP-MS	mg/L			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.001
Cobalt Co	ICP-MS	mg/L			0.000313	0.000085	0.000031	0.000261	0.000178	0.000436	0.000104	0.00914
Copper Cu	ICP-MS	mg/L	0.6	1	0.00347	0.00082	0.00065	0.00191	0.00279	0.00153	0.00254	1.48
Iron Fe	ICP-MS	mg/L		0.3	0.005	0.001	0.002	0.002	0.003	0.004	0.003	0.046
Lead Pb	ICP-MS	mg/L	0.4	0.01	0.000088	0.000038	0.000061	0.00041	0.000131	0.00122	0.000065	0.00029
Lithium Li	ICP-MS	mg/L			0.0141	0.021	0.0088	0.0131	0.0132	0.0172	0.0139	0.018
Magnesium Mg	ICP-MS	mg/L		100	18.1	10.5	6.85	6.92	7.05	9.29	6.94	14
Manganese Mn	ICP-MS	mg/L		0.05	0.303	0.0825	0.0307	0.216	0.16	0.263	0.136	0.155
Mercury Hg	CVAA	ug/L		0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.1
Molybdenum Mo	ICP-MS	mg/L		0.25	0.209	0.352	0.232	0.252	0.194	0.369	0.22	0.232
Nickel Ni	ICP-MS	mg/L	1		0.00593	0.00159	0.00038	0.00193	0.00101	0.00302	0.00091	0.109
Phosphorus P	ICP-MS	mg/L			0.002	0.002	0.003	0.002	0.002	0.004	0.002	0.02
Potassium K	ICP-MS	mg/L			32.2	28.2	16.2	13.5	16	16.7	16.3	22
Selenium Se	ICP-MS	mg/L		0.01	0.00025	0.00055	0.00032	0.00046	0.00036	0.00058	0.00029	0.0037
Silicon Si	ICP-MS	mg/L			2.81	2.81	2.35	4.27	4.18	5.42	3.99	3.65
Silver Ag	ICP-MS	mg/L			0.000011	0.000005	0.00001	0.000005	0.000006	0.000008	0.000005	0.0278
Sodium Na	ICP-MS	mg/L		200	29.5	15.9	8.8	8.59	11.1	11.1	10.7	27
Strontium Sr	ICP-MS	mg/L			6.31	2.35	3.82	4.15	4.88	5.66	4.72	5.62
Sulphur (S)	ICP-MS	mg/L			291	37	25	27	33	38	30	97
Thallium Tl	ICP-MS	mg/L			0.000041	0.000034	0.00003	0.000111	0.000058	0.000071	0.000039	0.00005
Tin Sn	ICP-MS	mg/L			0.00002	0.00002	0.00002	0.00015	0.00046	0.0002	0.00005	0.0001
Titanium Ti	ICP-MS	mg/L			0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.005
Uranium U	ICP-MS	mg/L		0.02	0.00934	0.0022	0.0038	0.00768	0.0083	0.00986	0.00855	0.0089
Vanadium V	ICP-MS	mg/L			0.0002	0.0004	0.0002	0.0003	0.0005	0.0003	0.0005	0.002
Zinc Zn	ICP-MS	mg/L	1	5	0.002	0.0007	0.0009	0.0012	0.001	0.0016	0.0013	0.024
Zirconium Zr	ICP-MS	mg/L			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.001

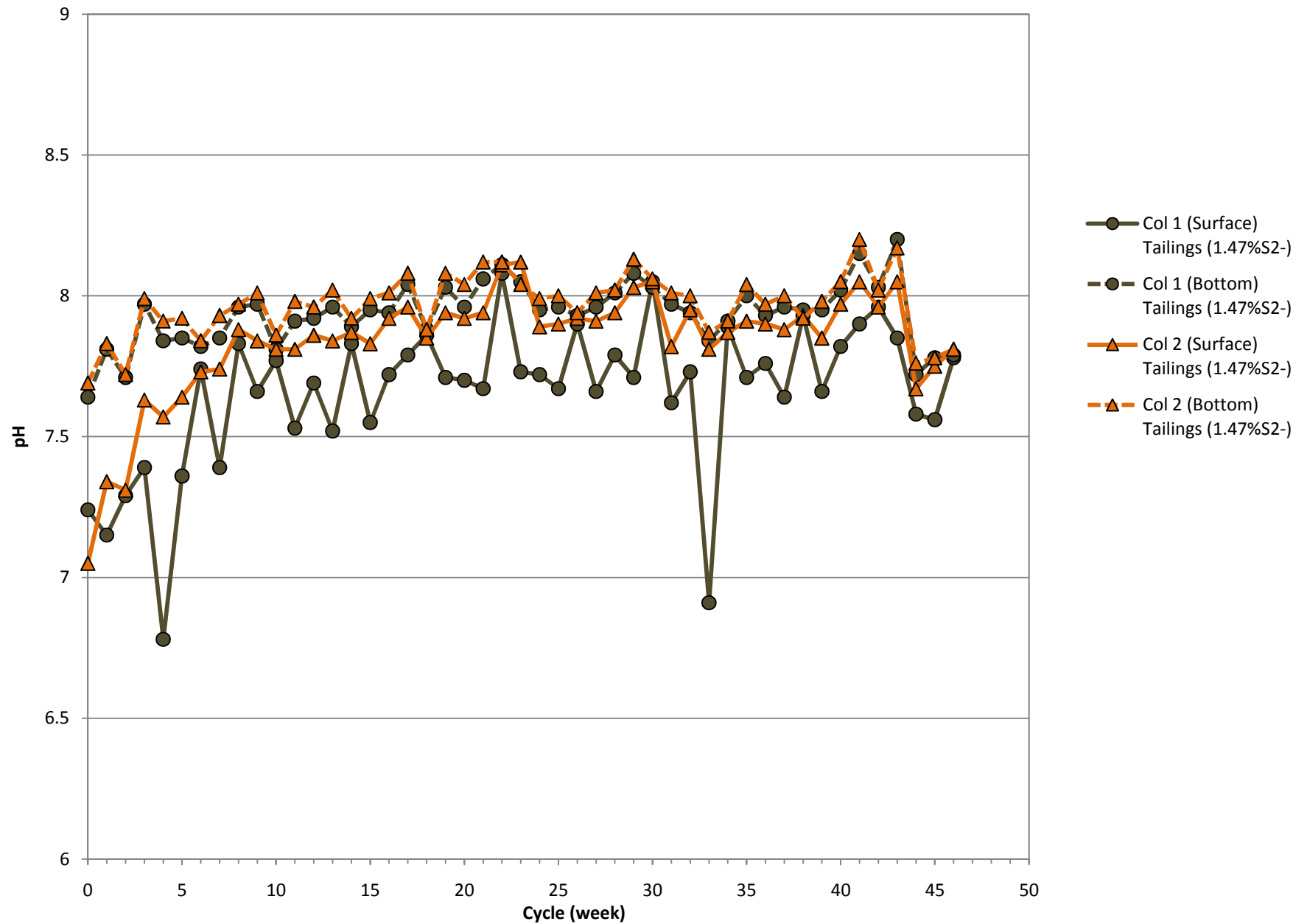
Appendix H: Kinetic Characterization Results for Tailings



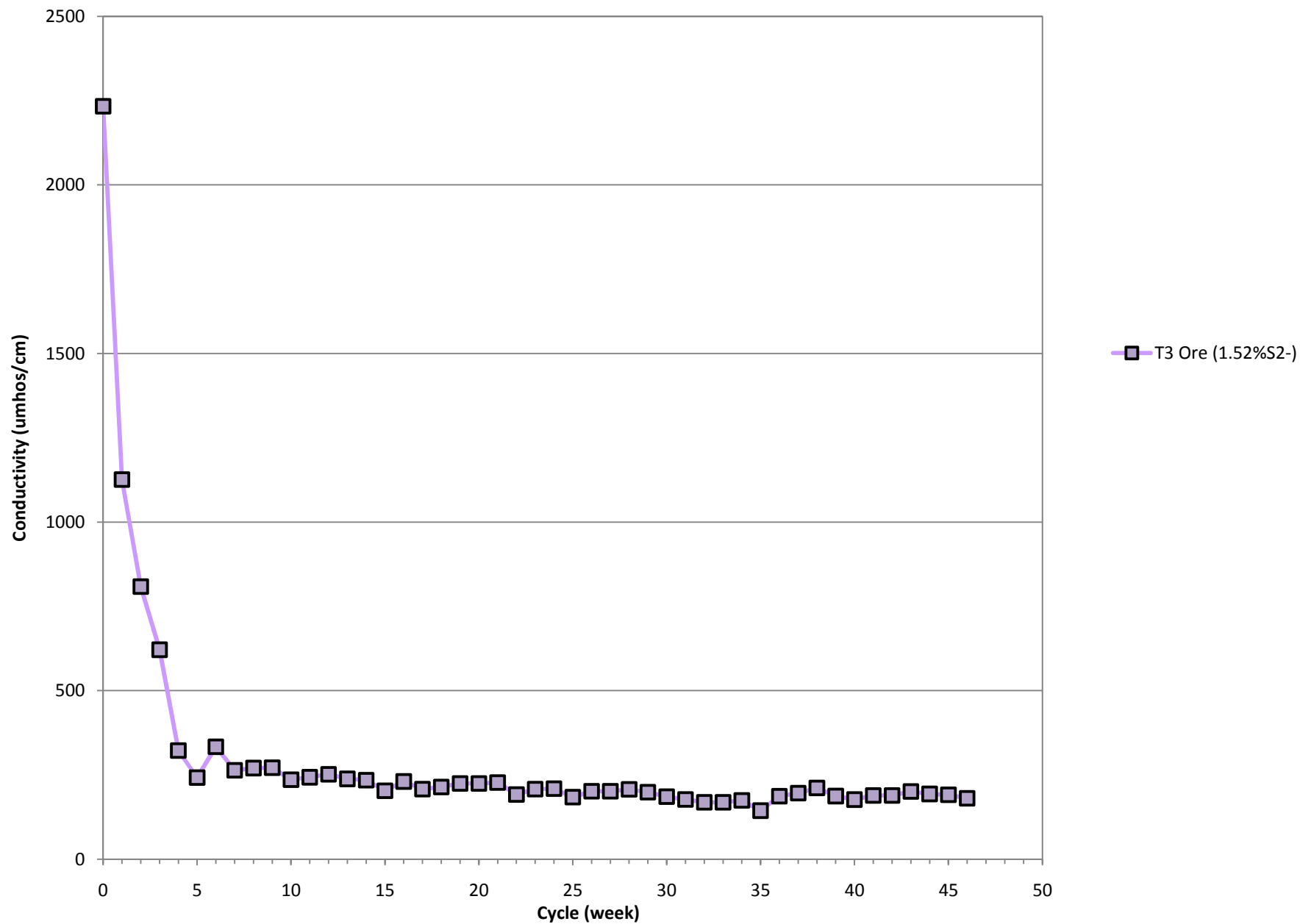
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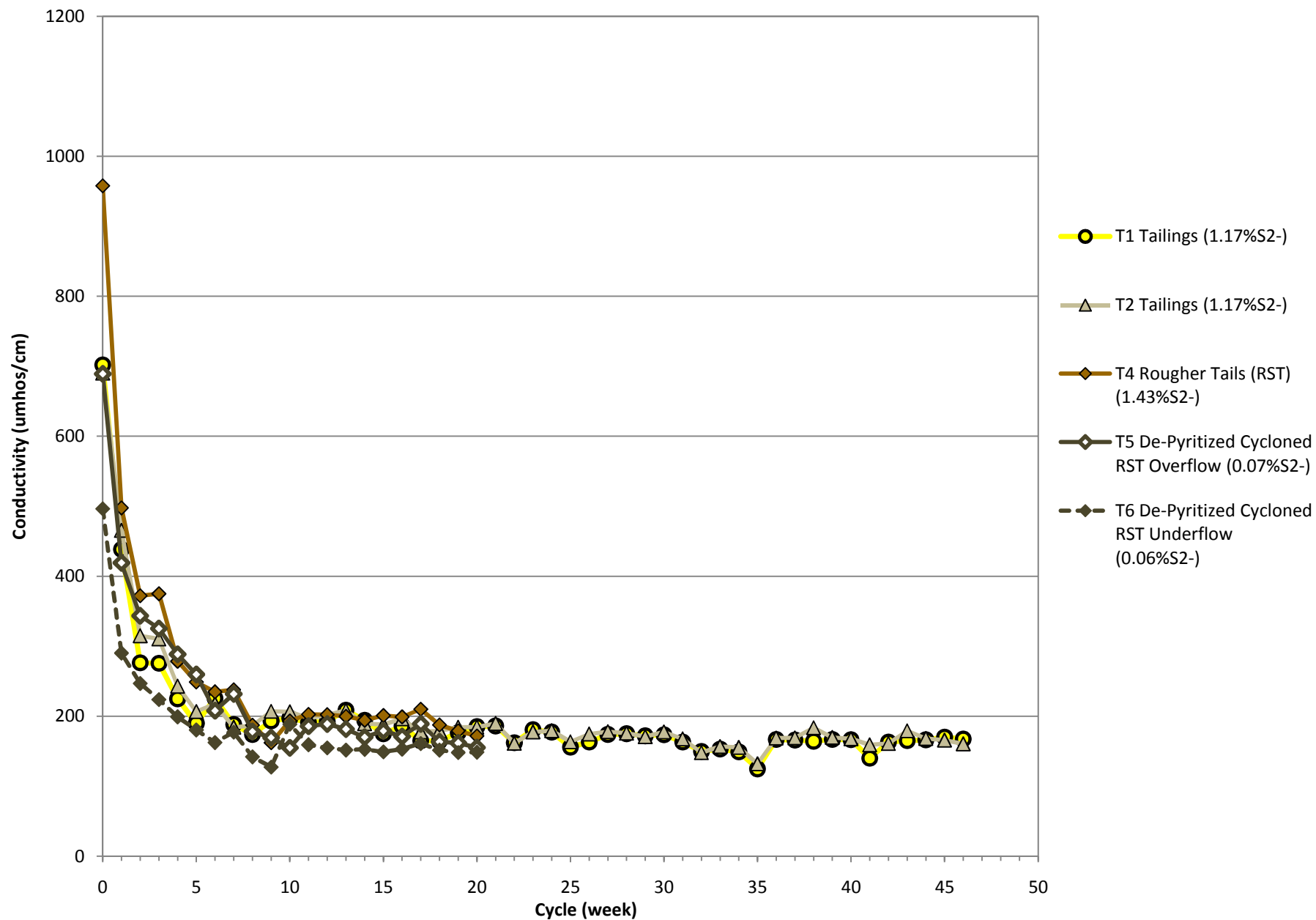
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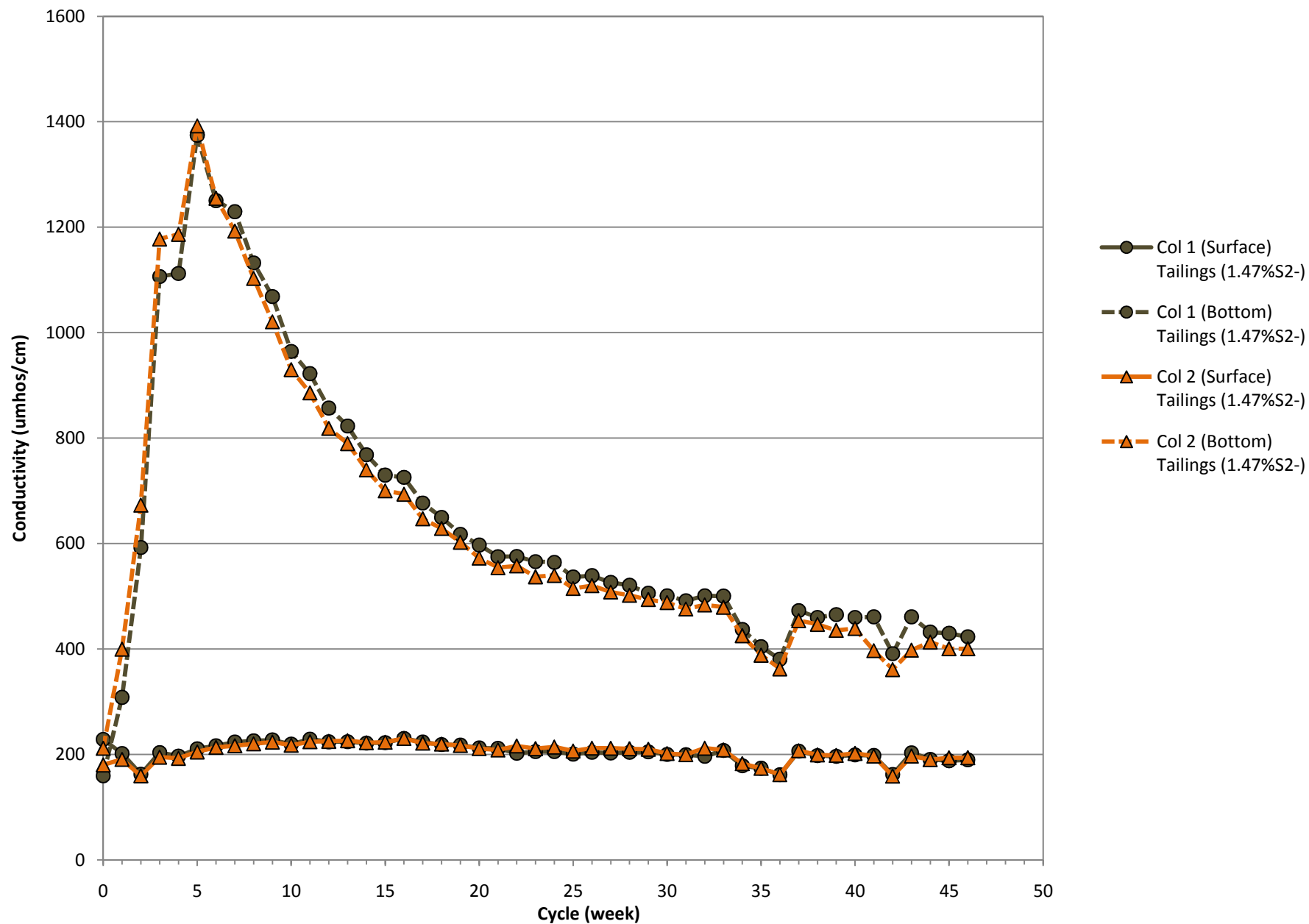
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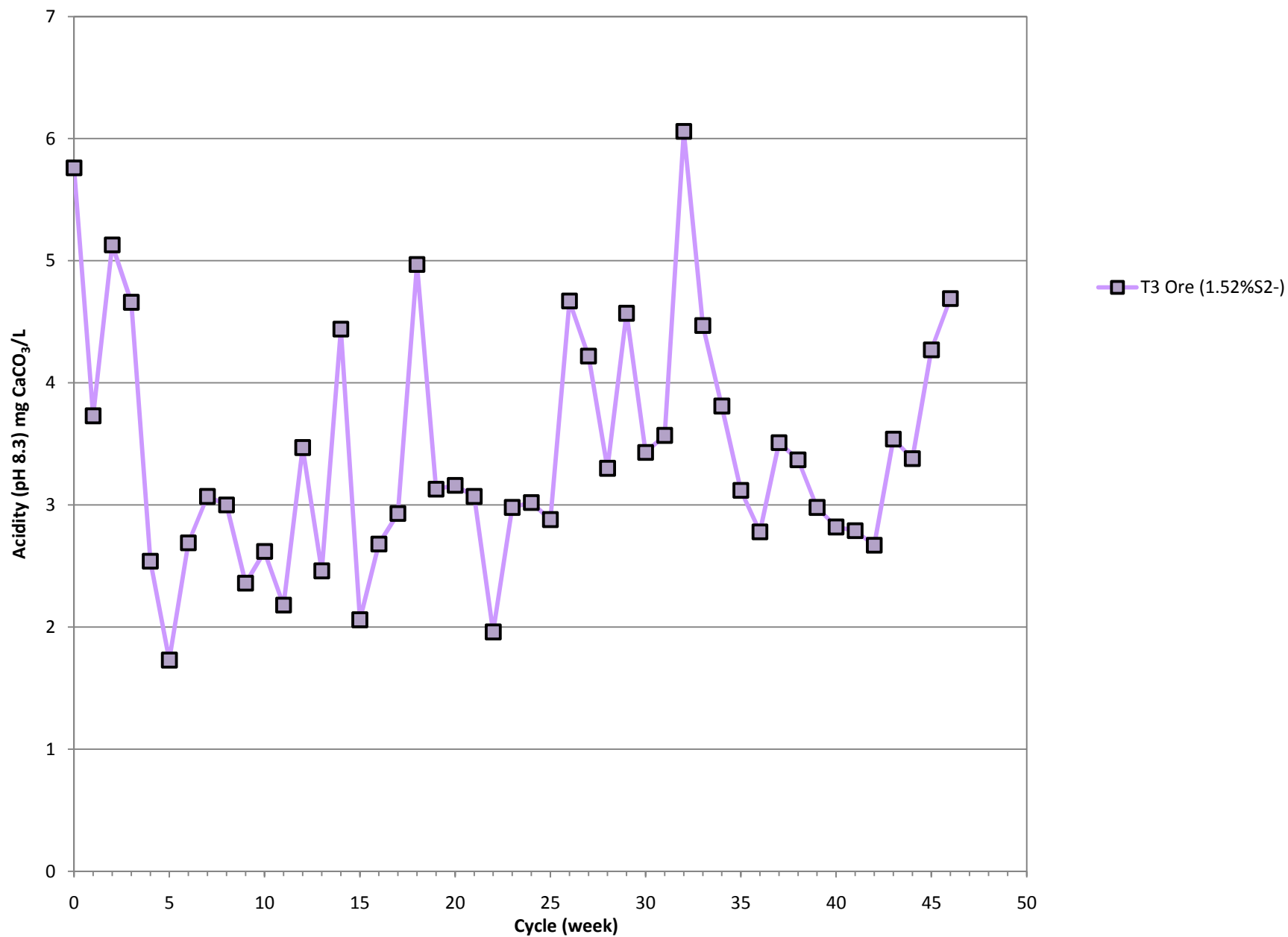
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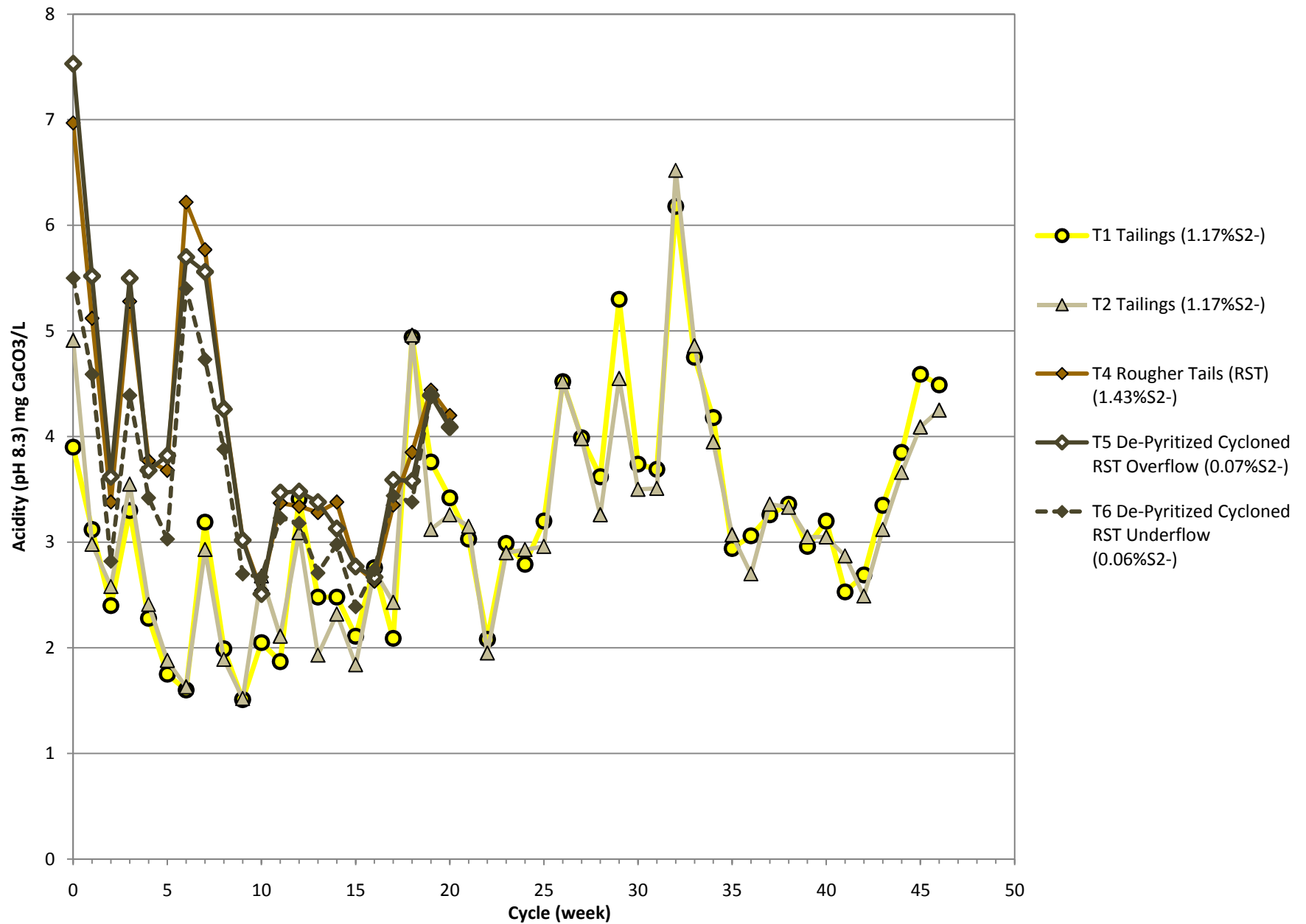
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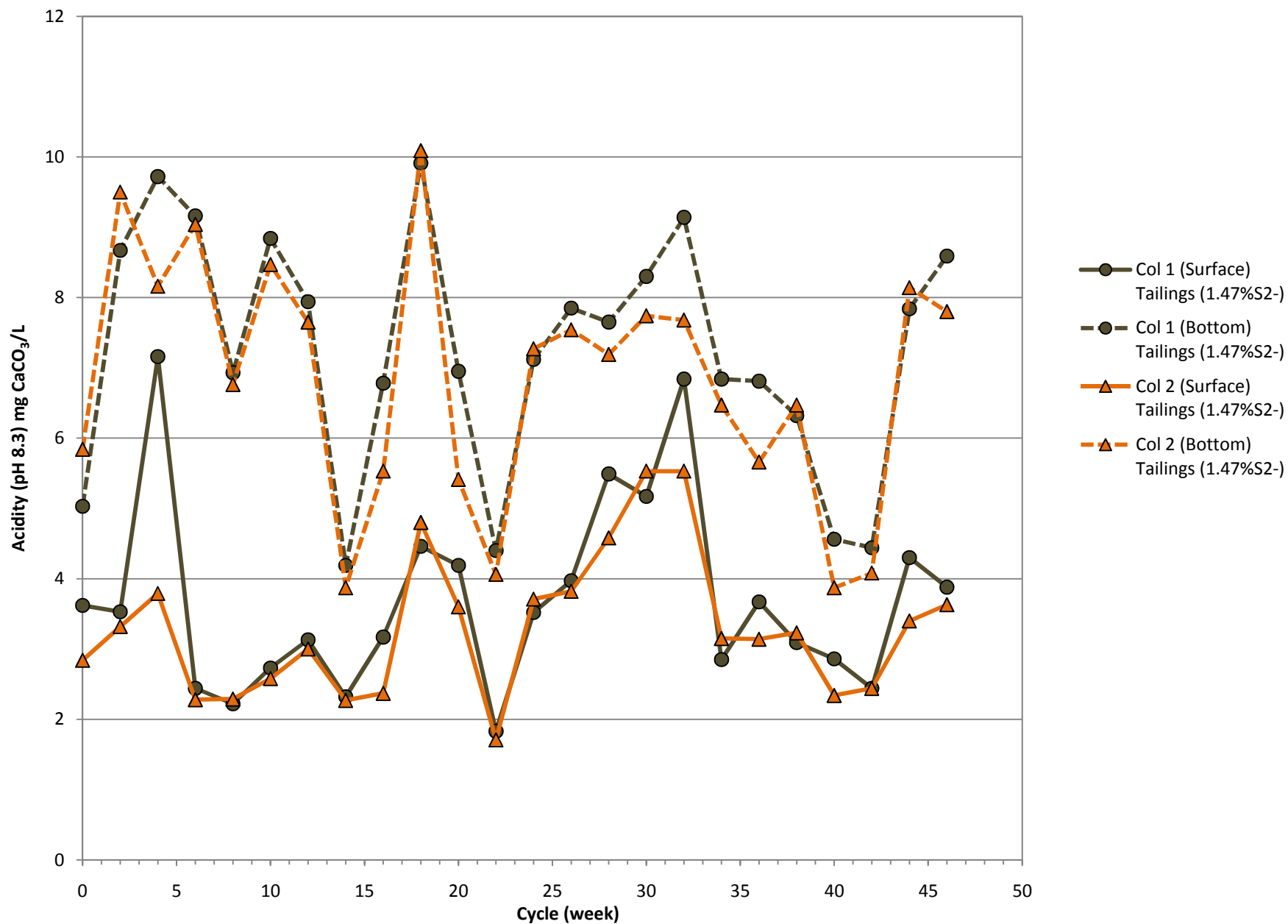
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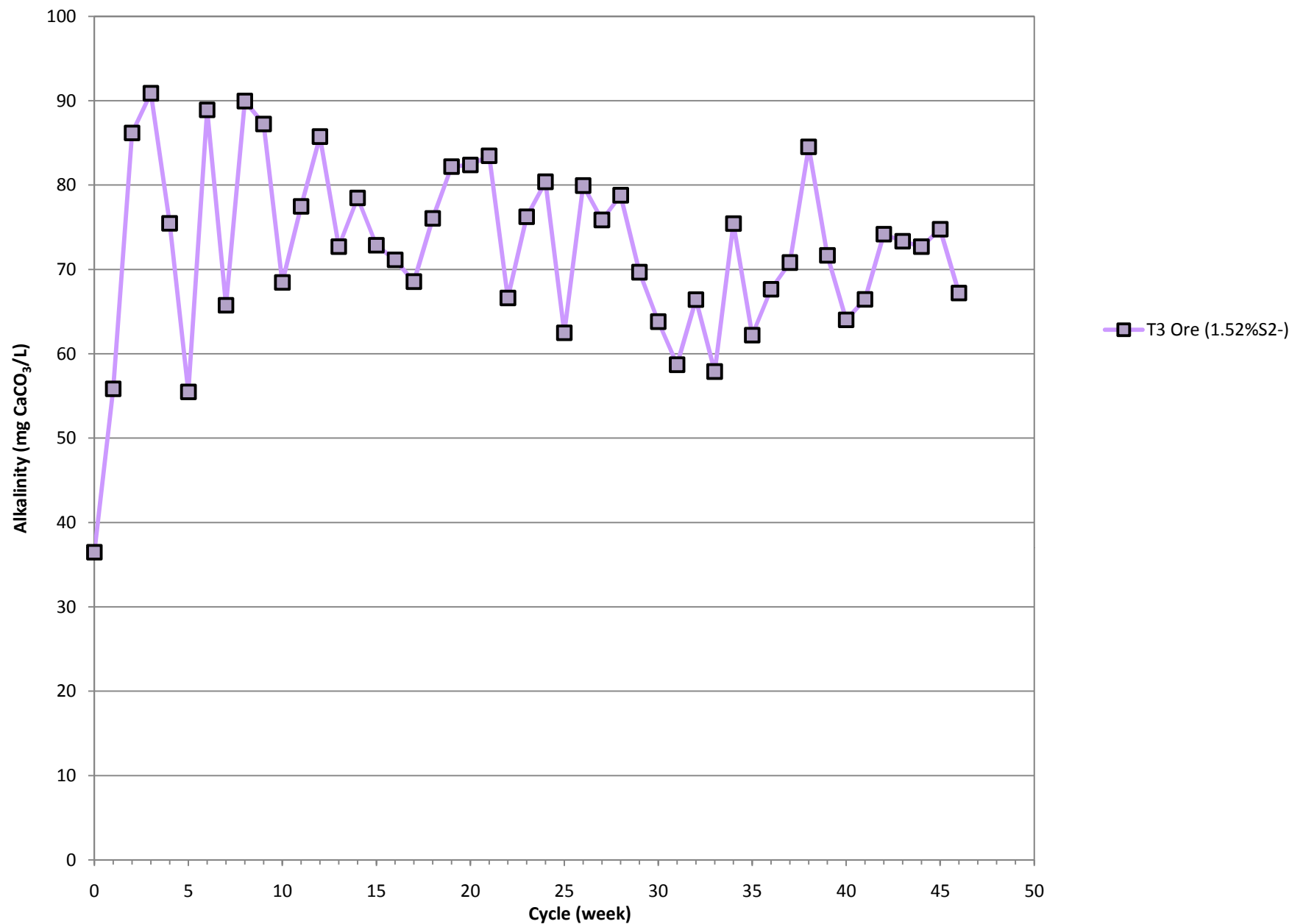
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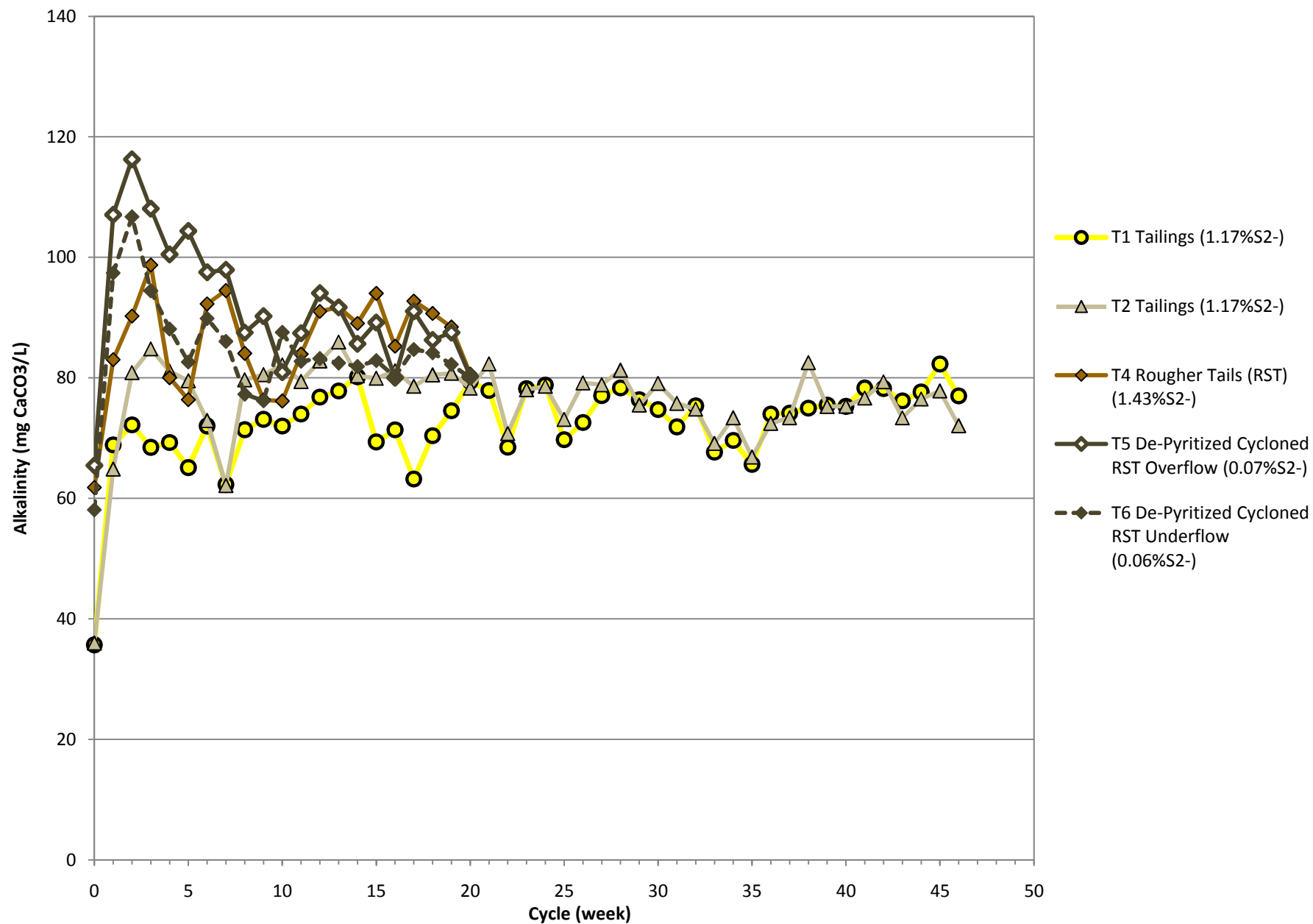
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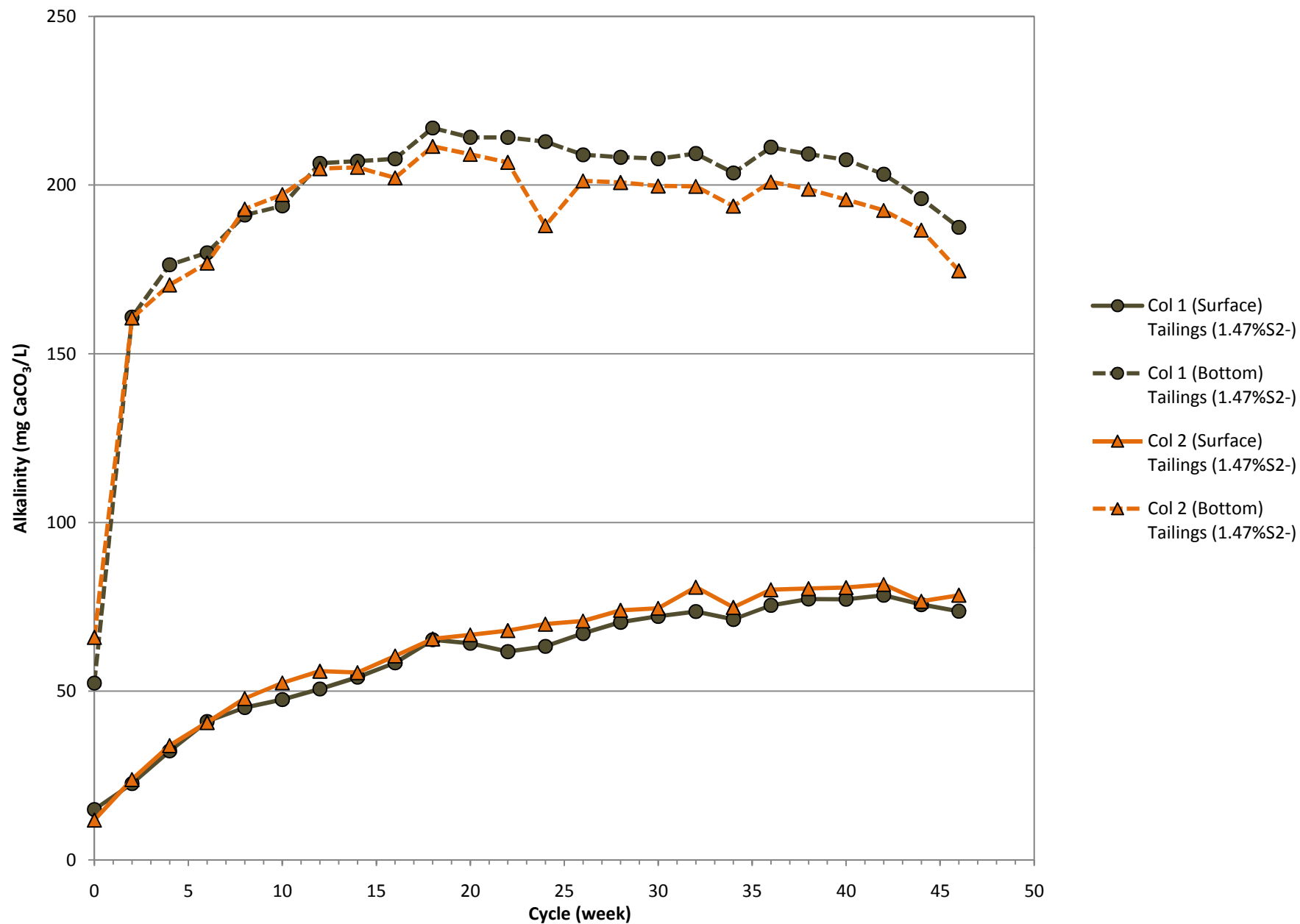
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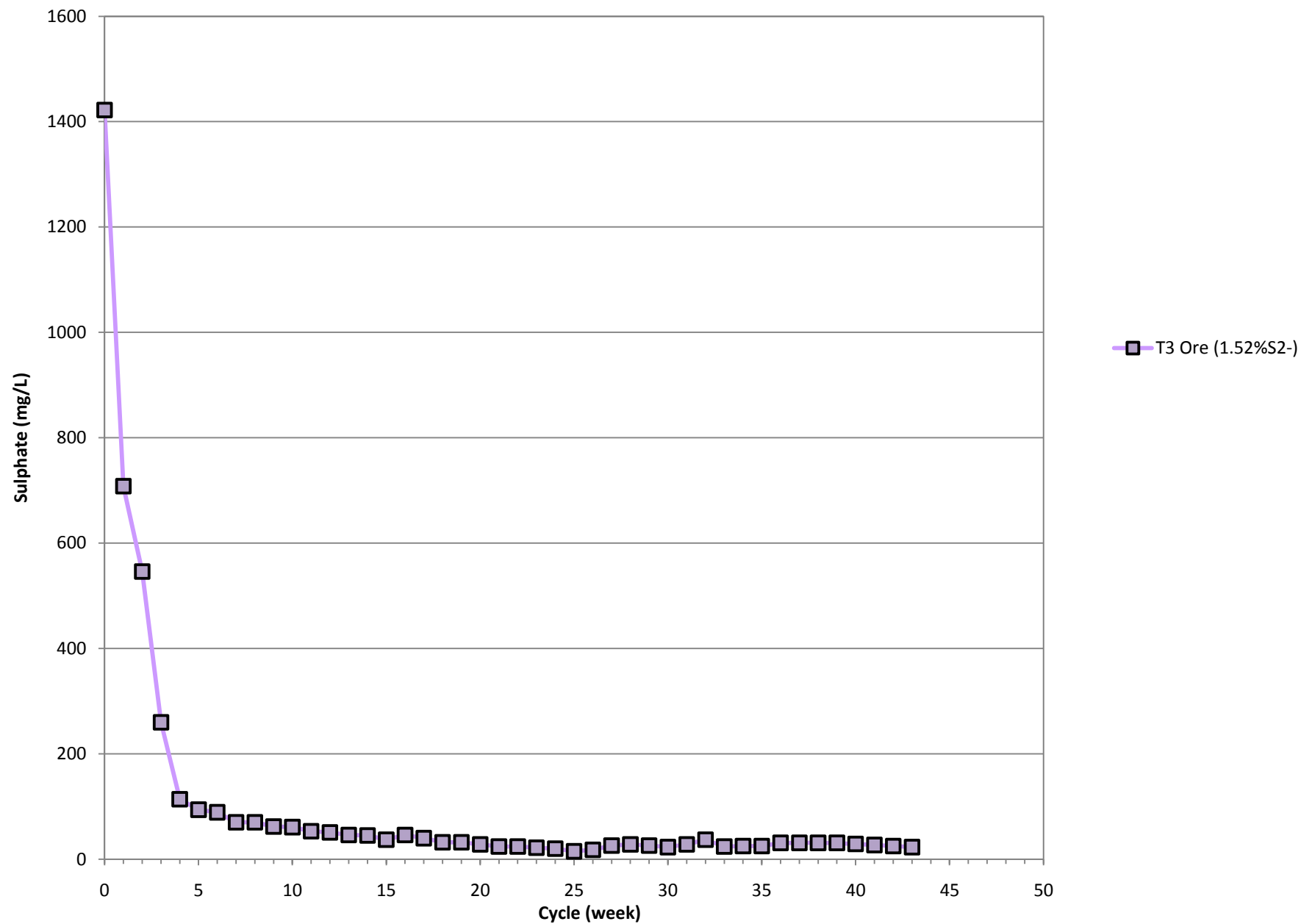
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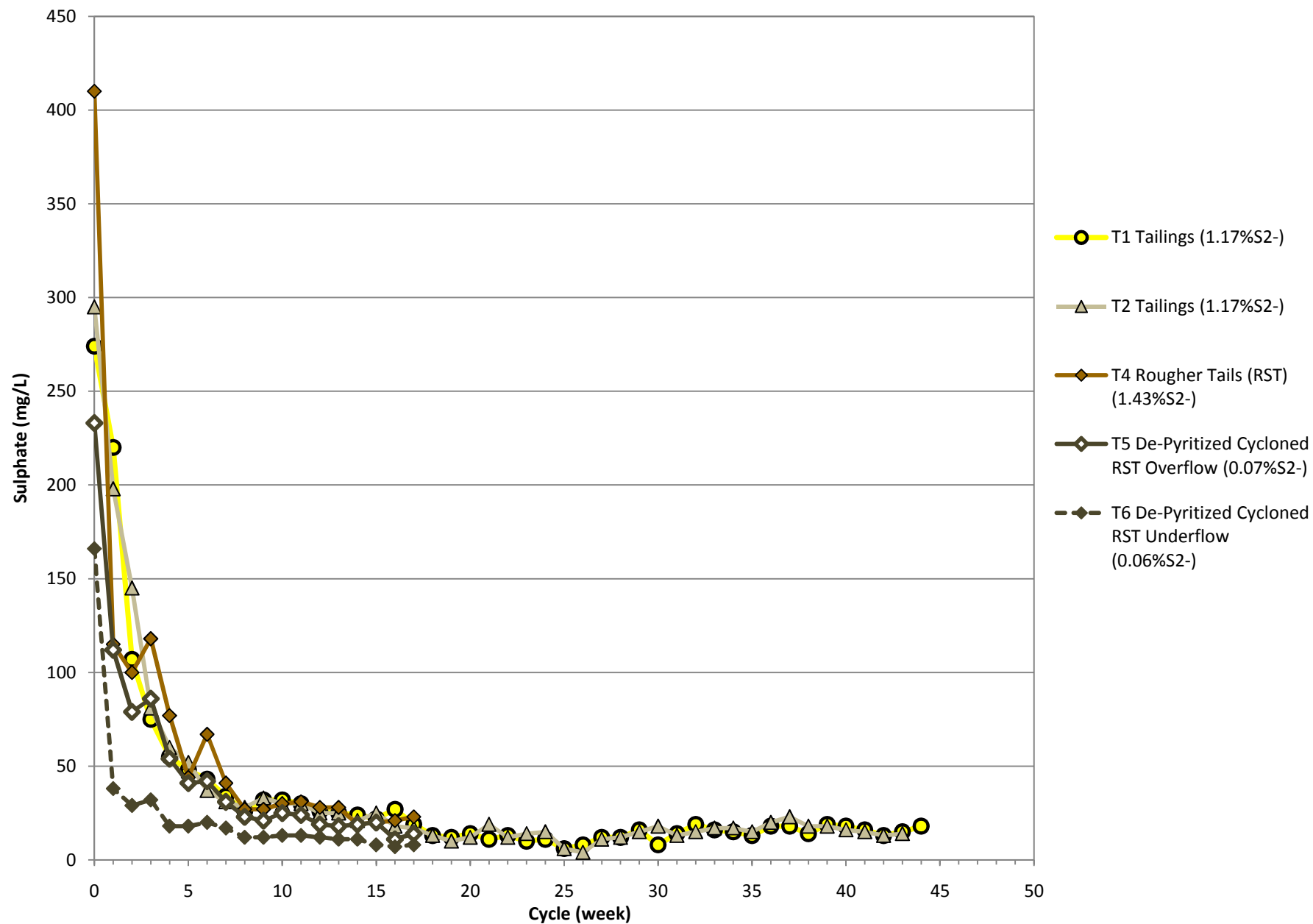
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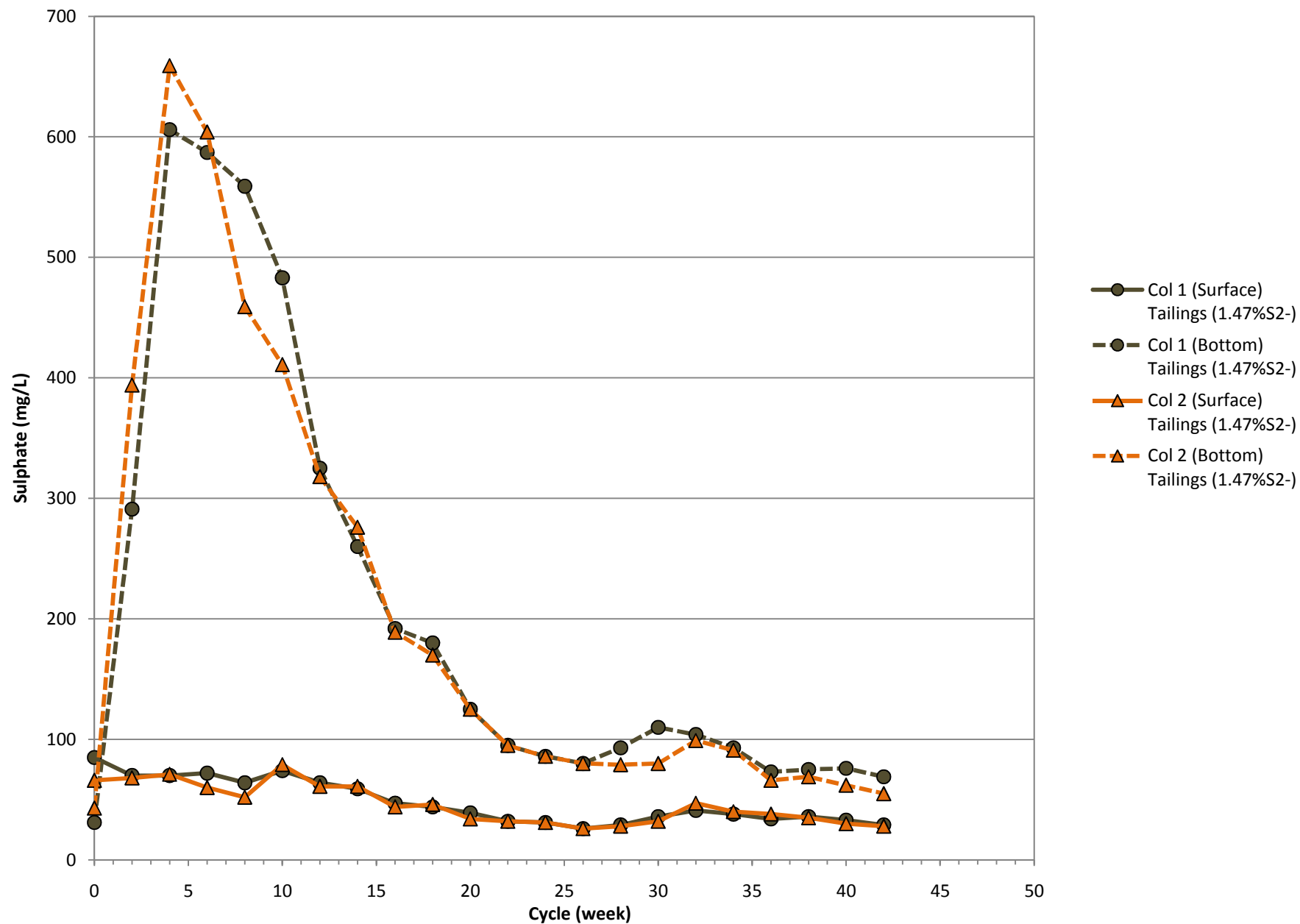
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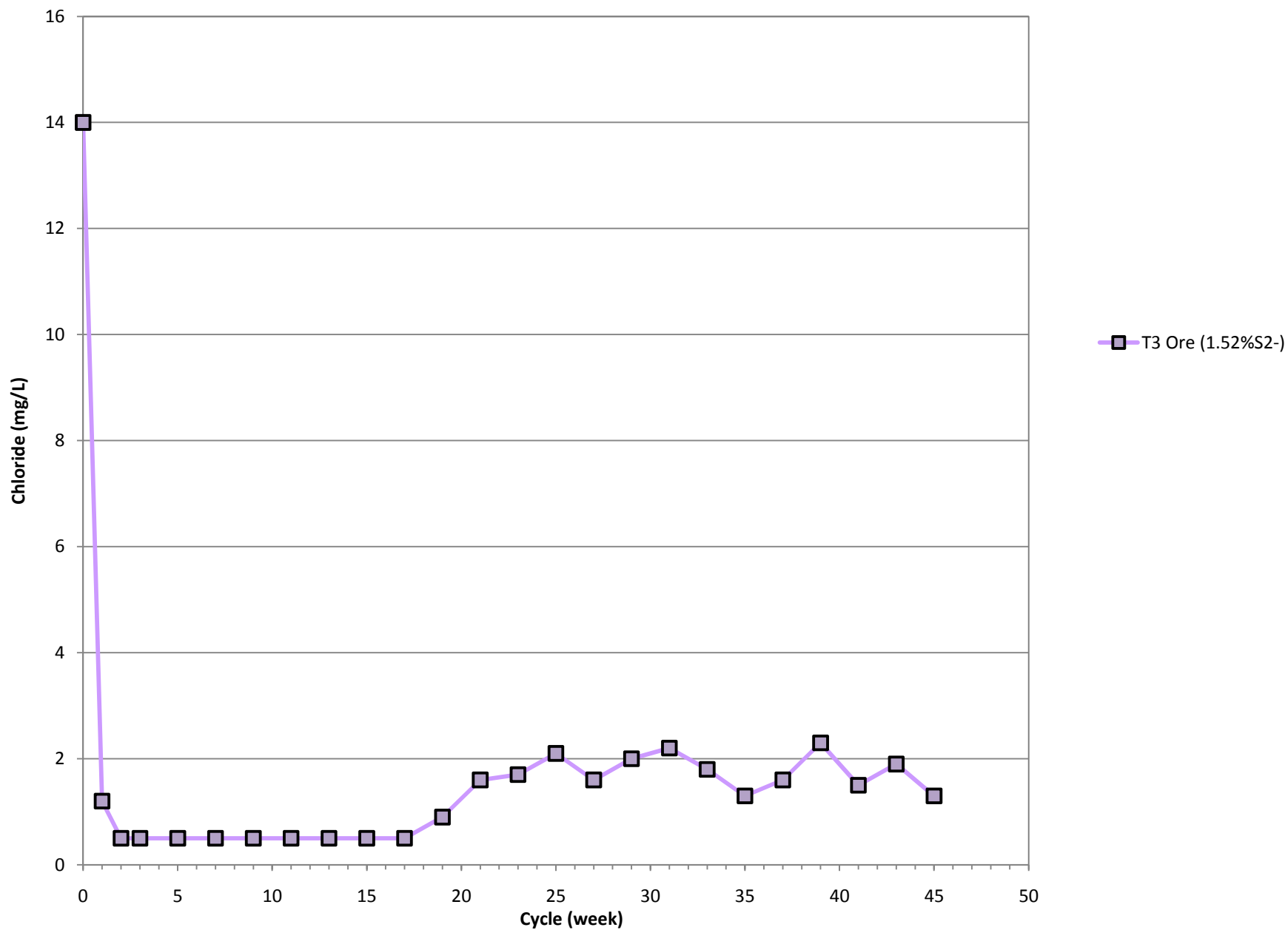
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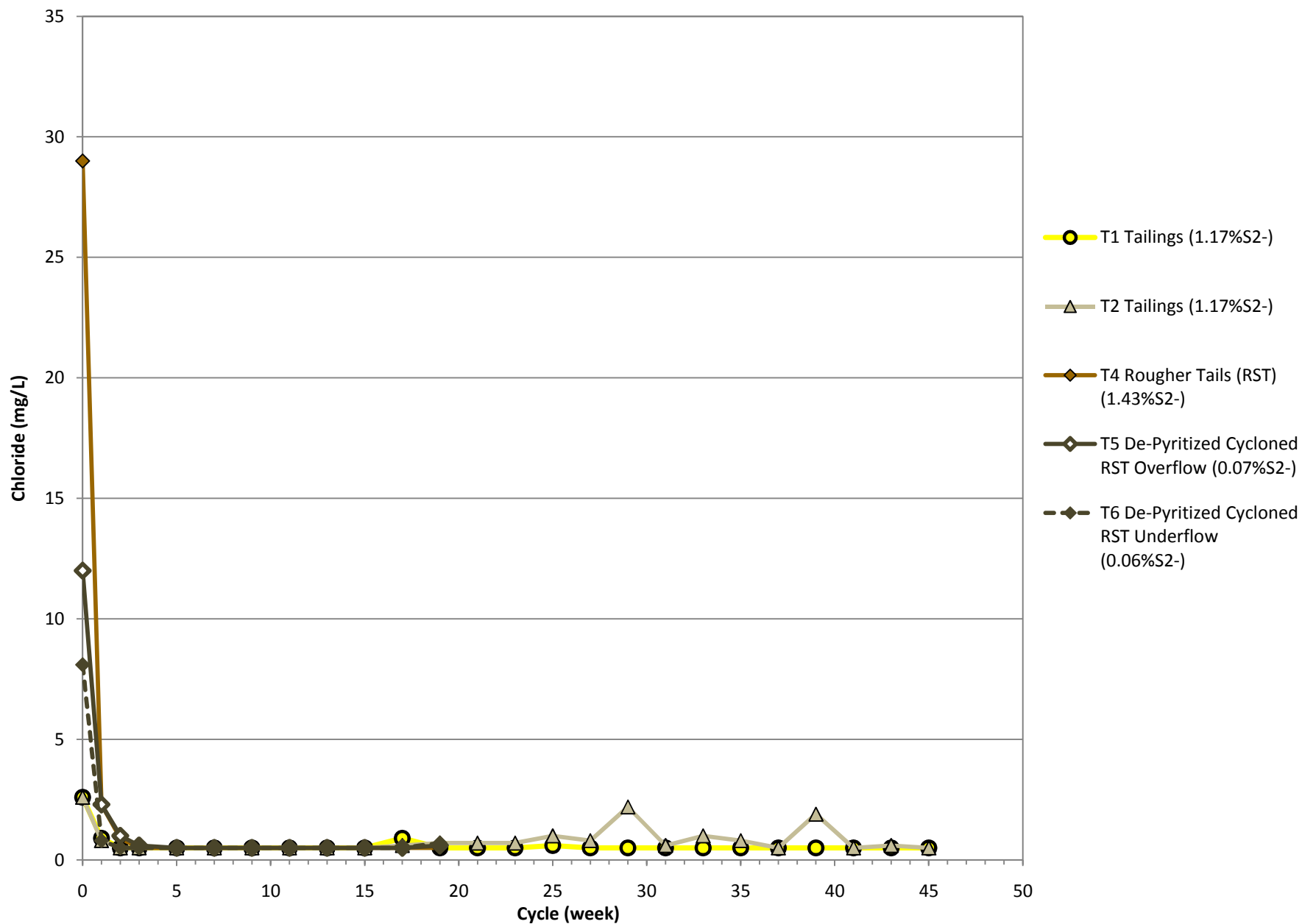
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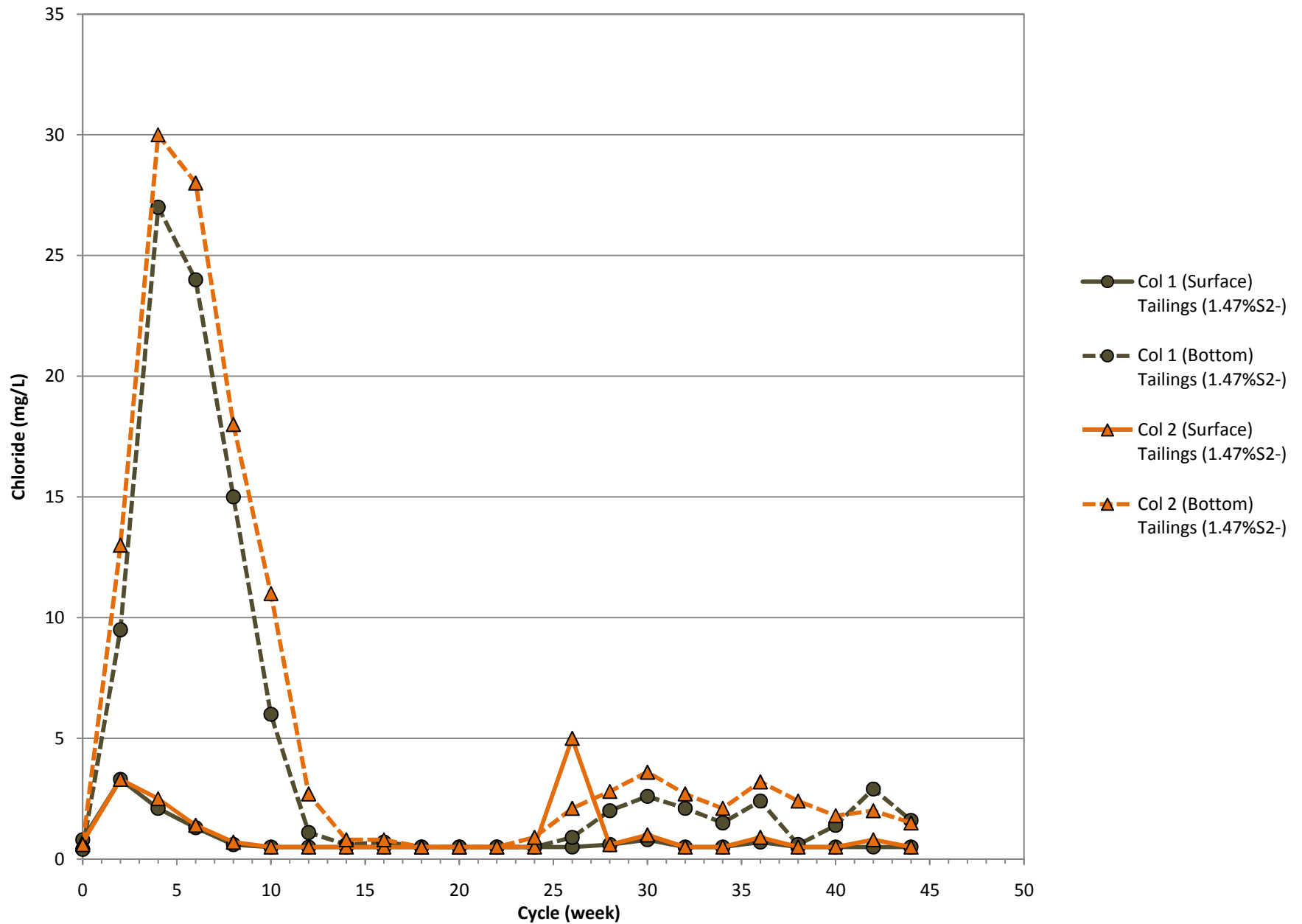
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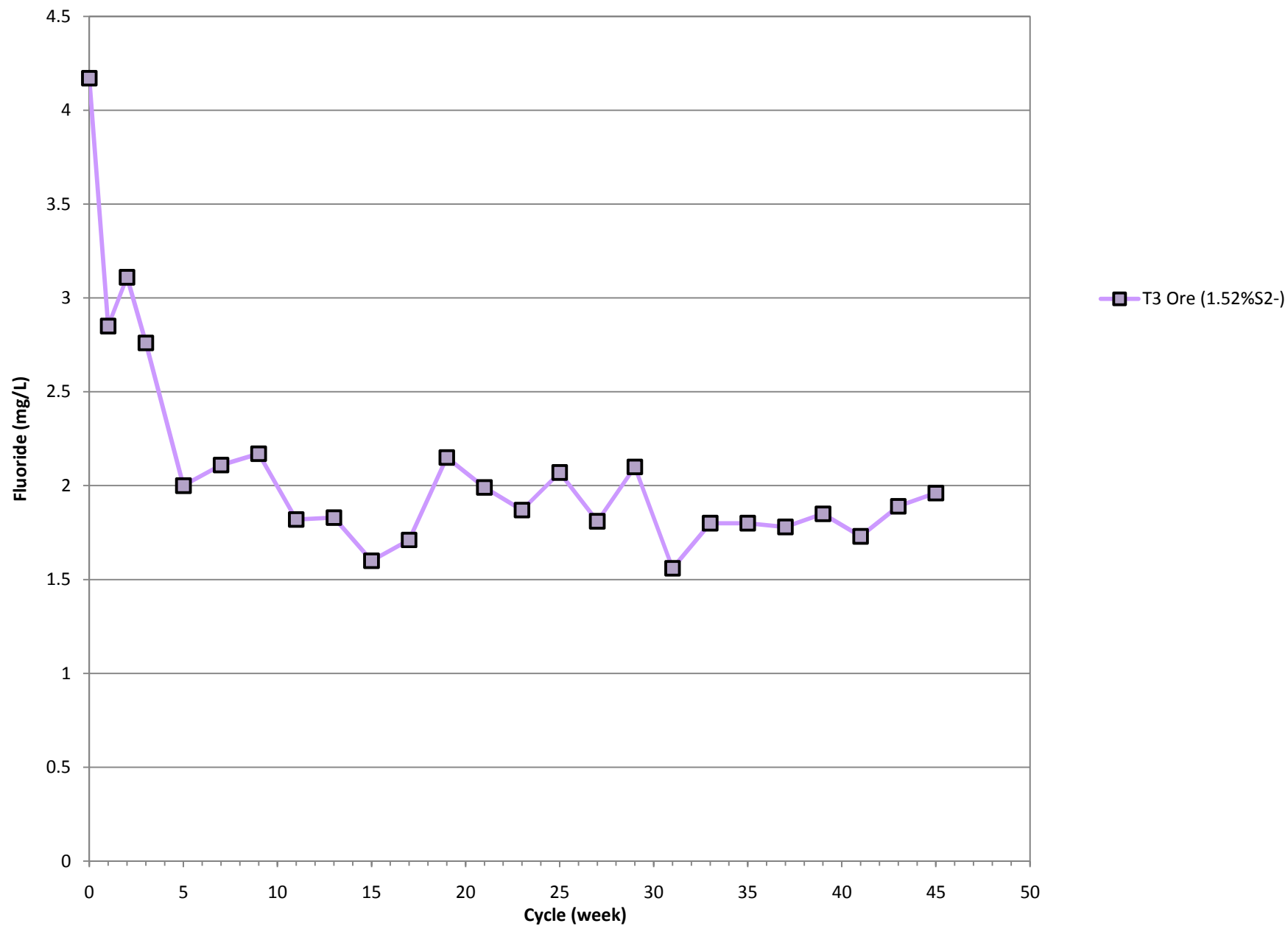
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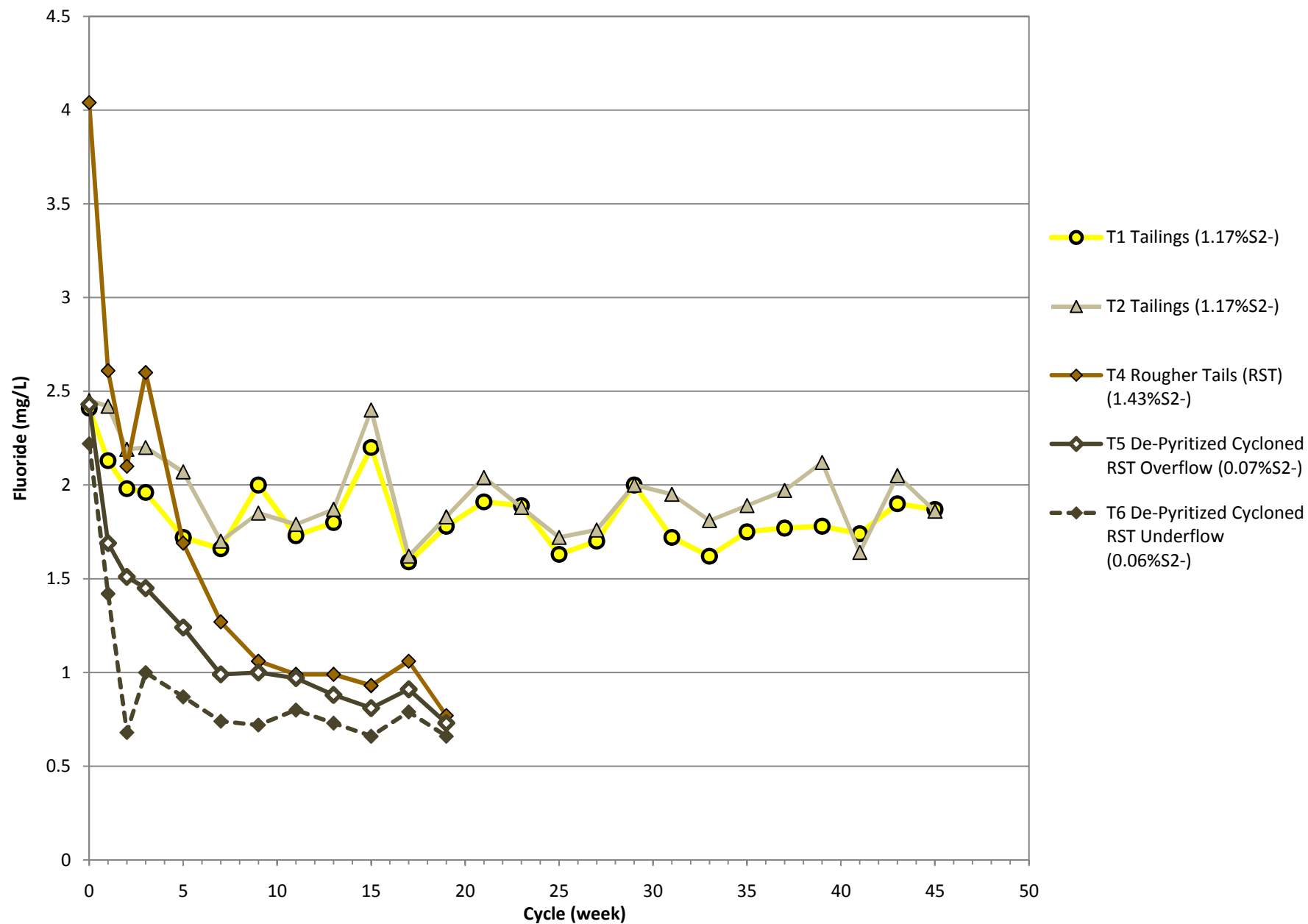
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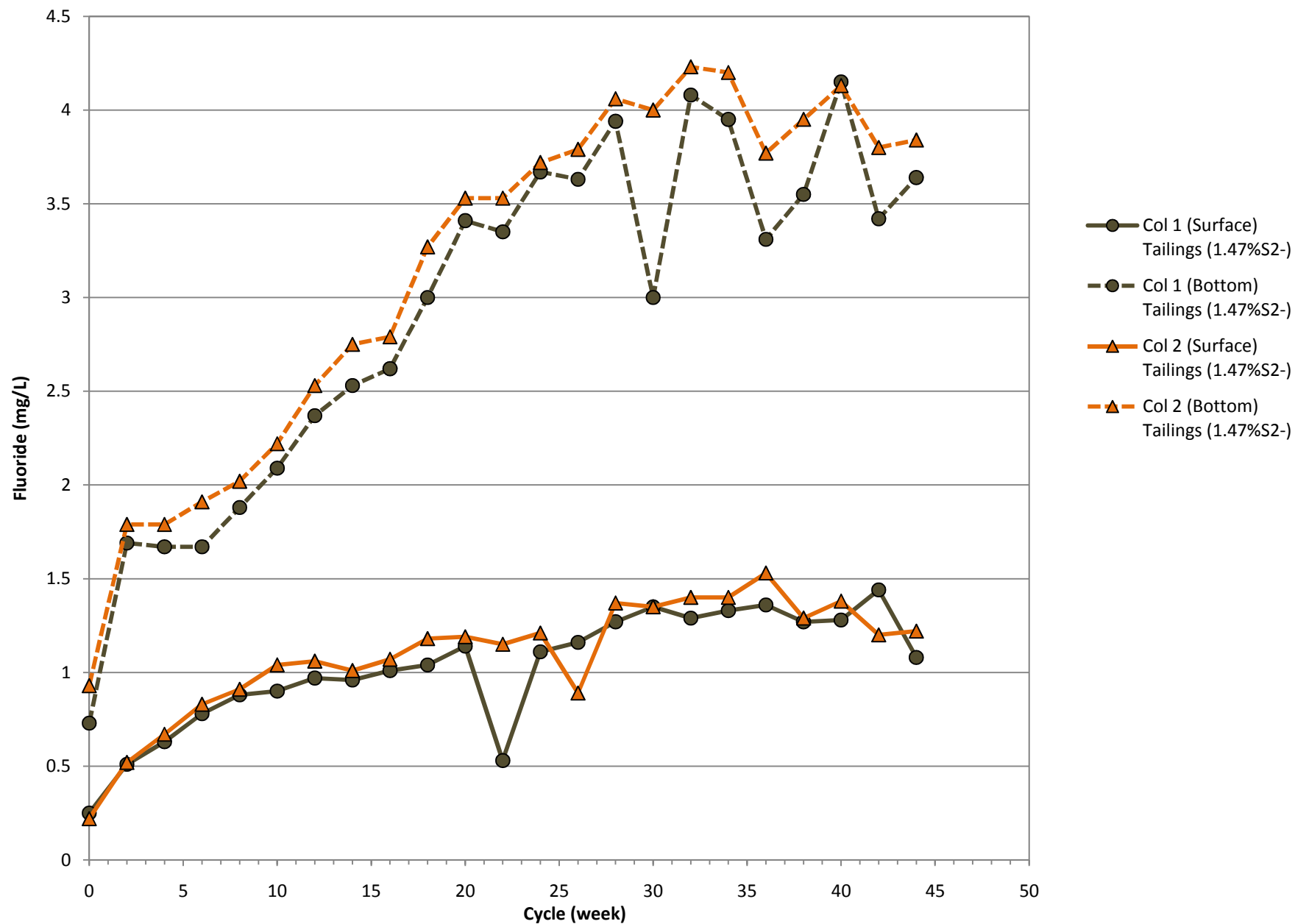
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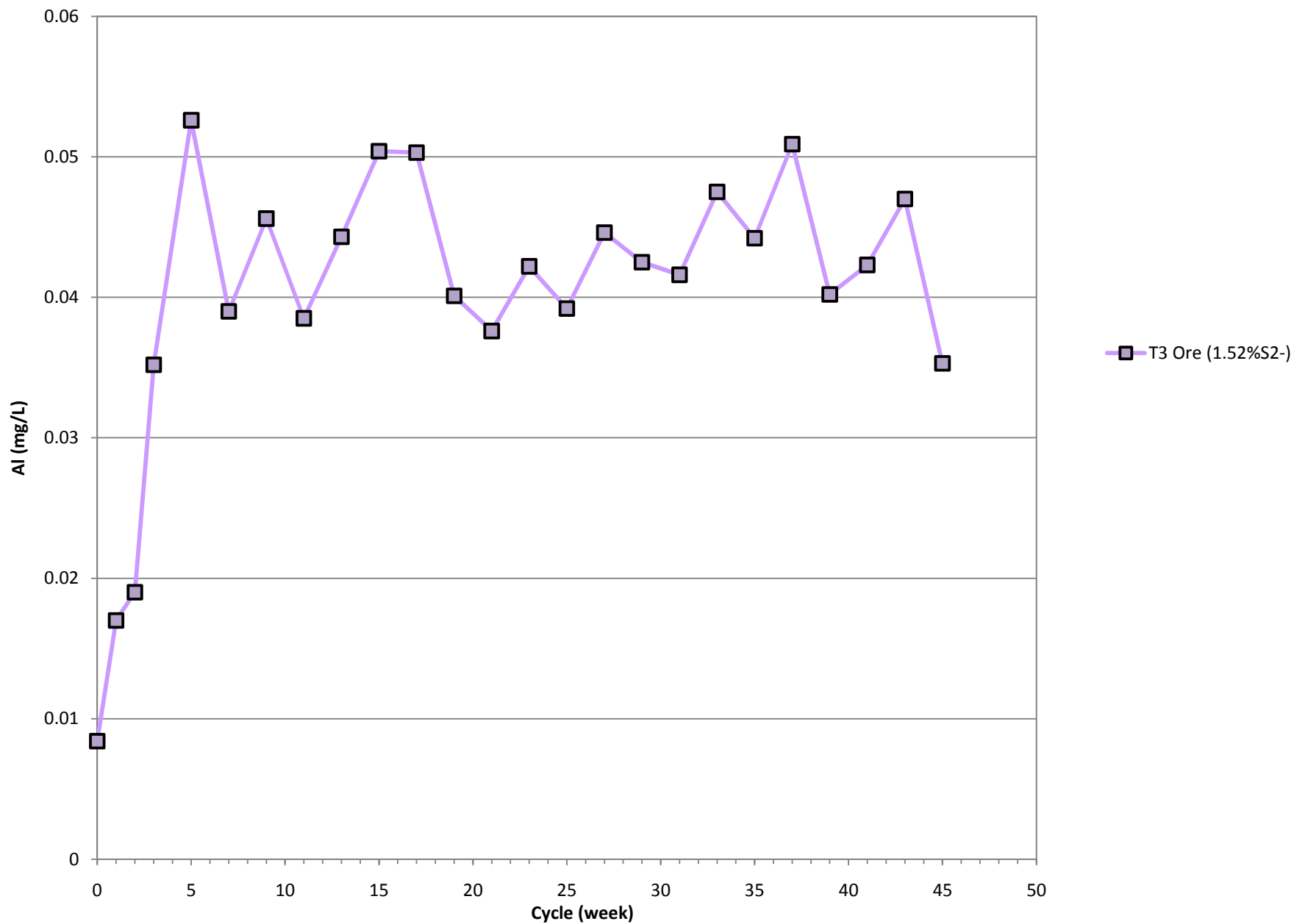
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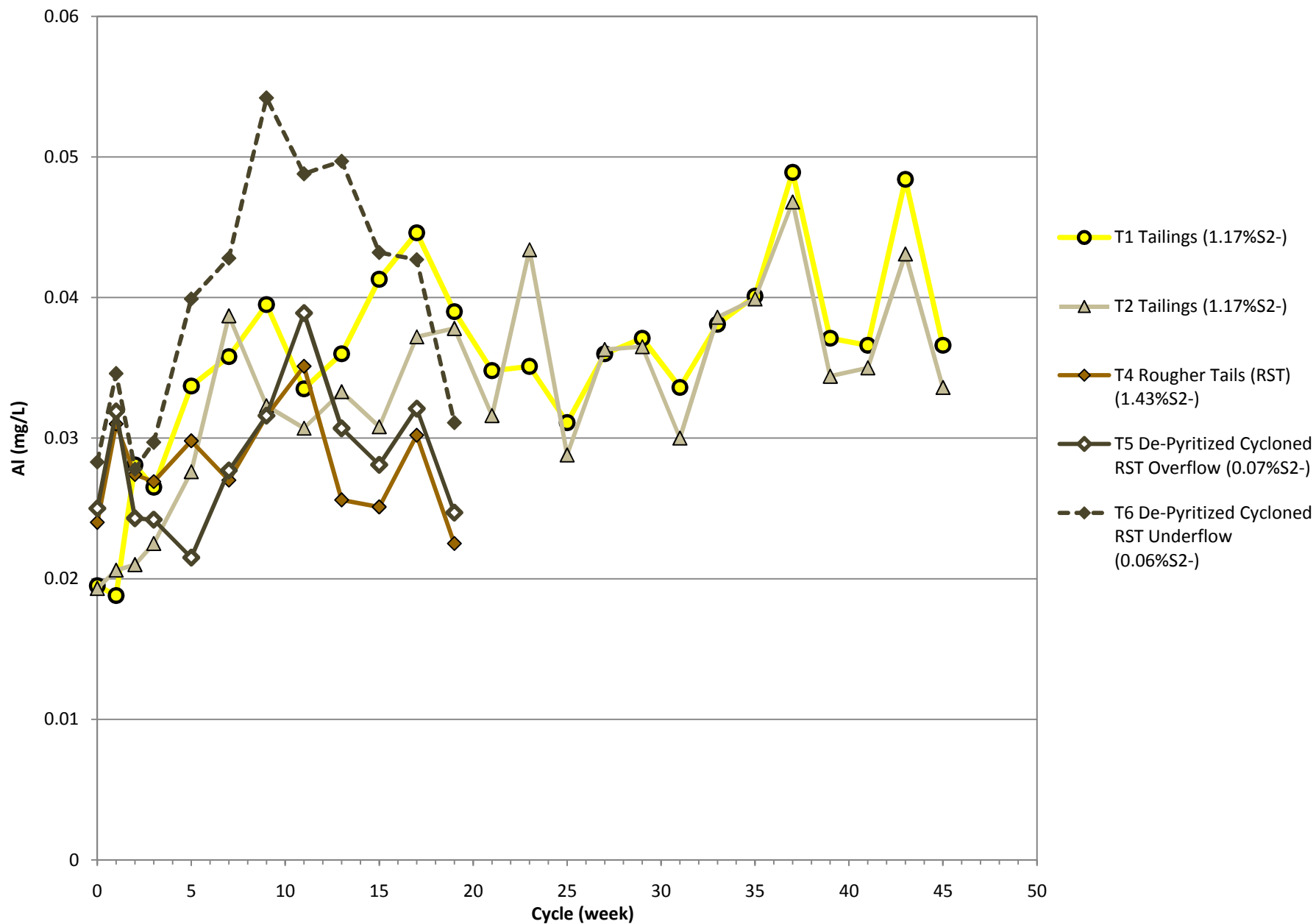
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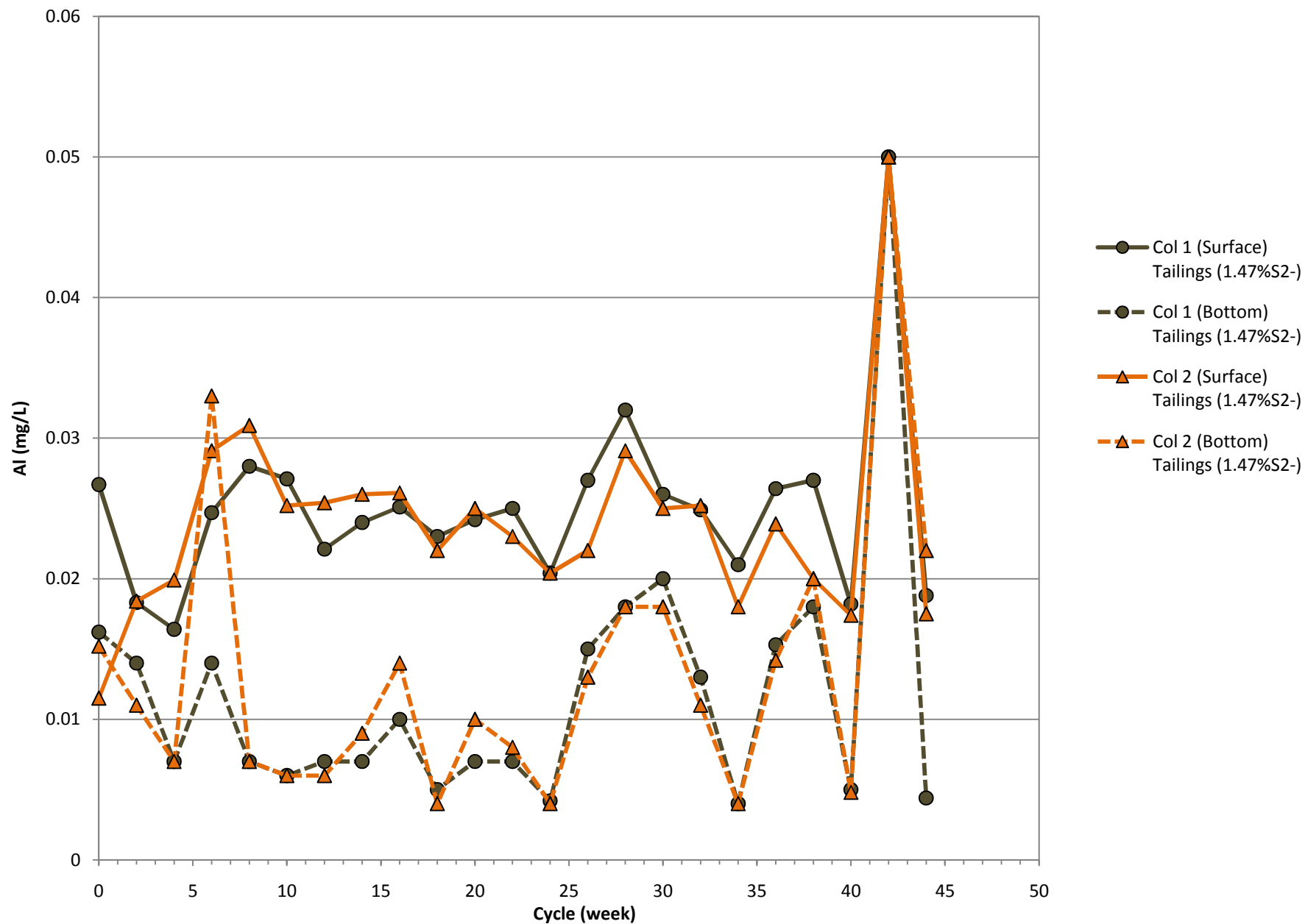
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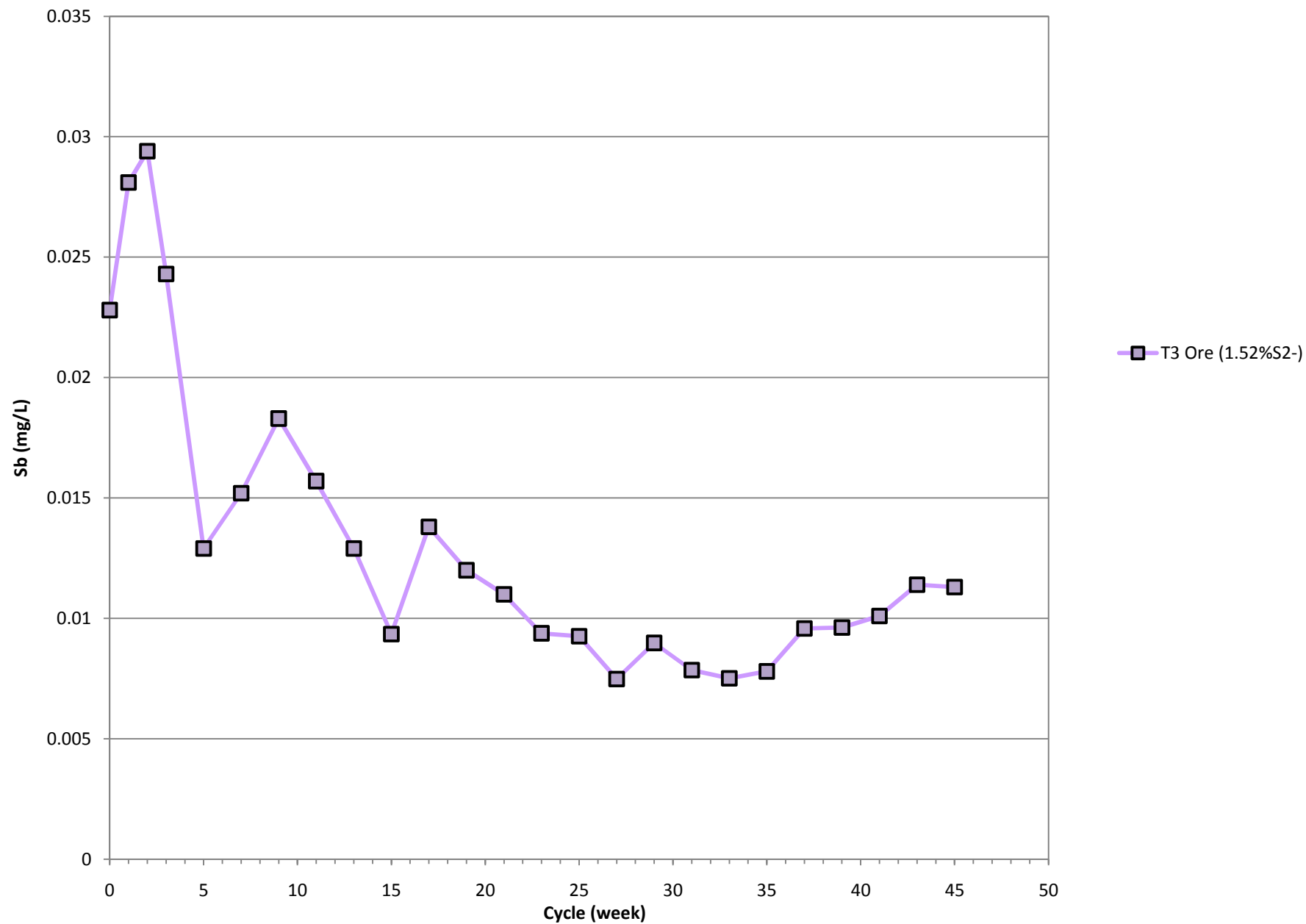
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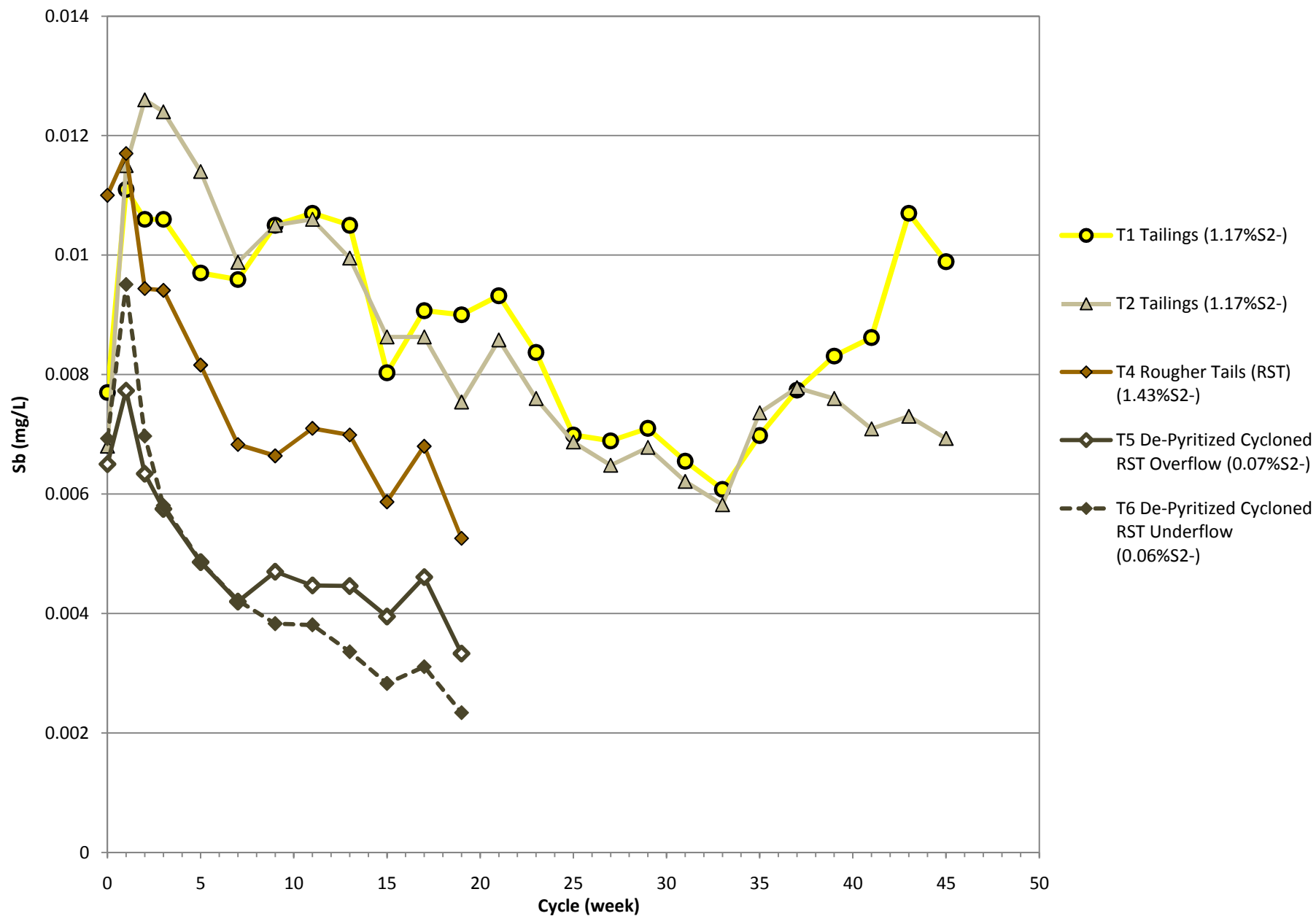
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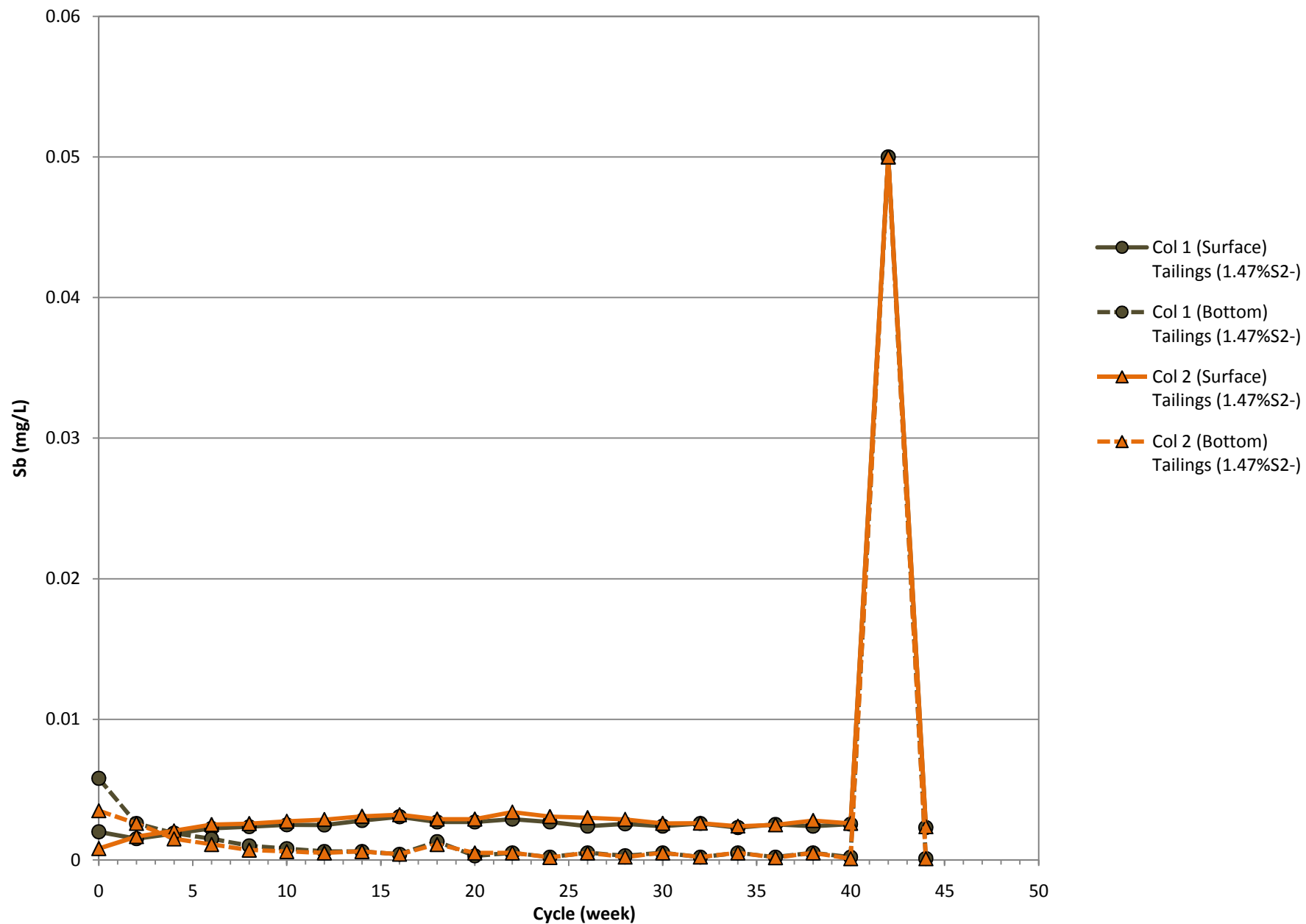
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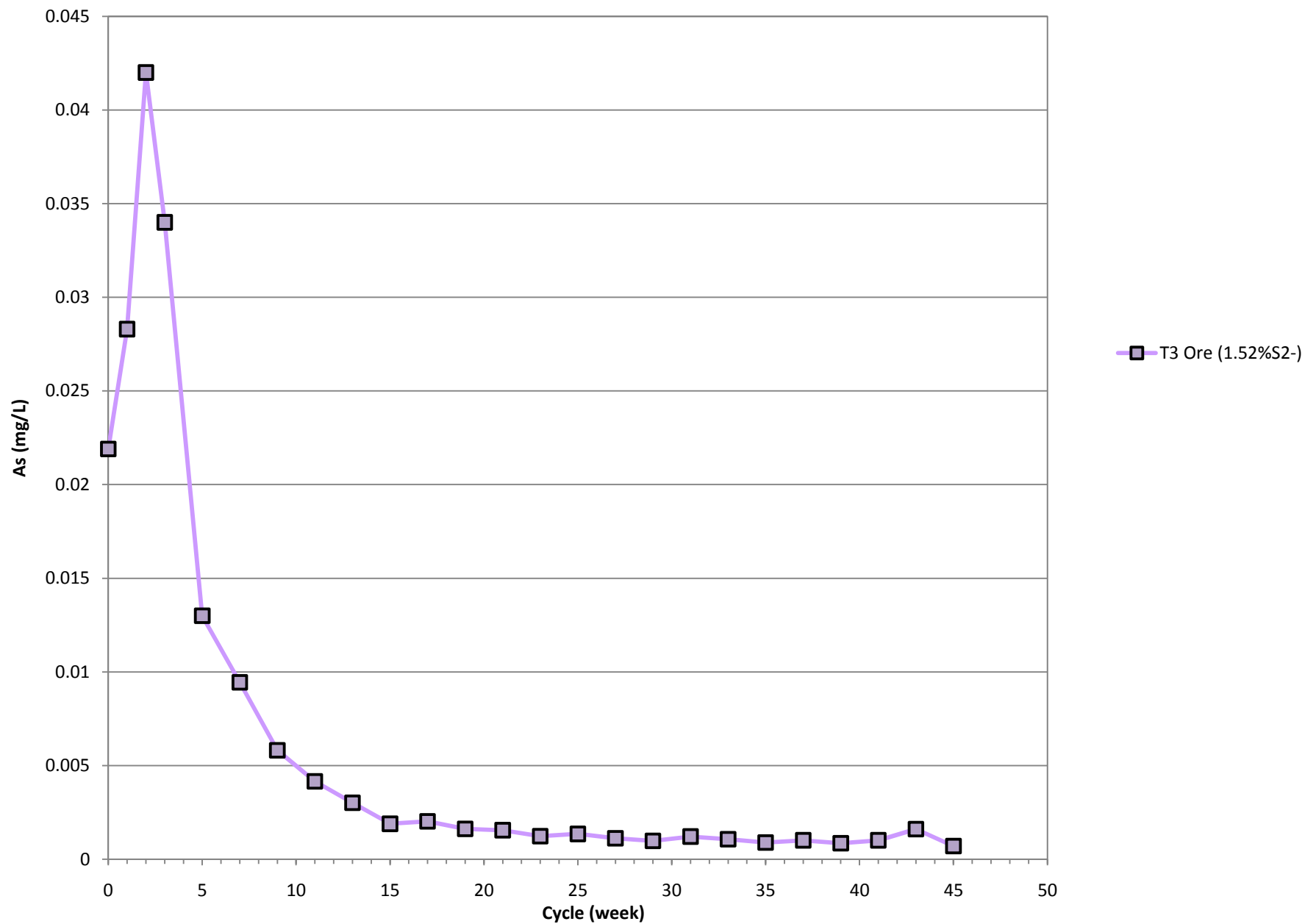
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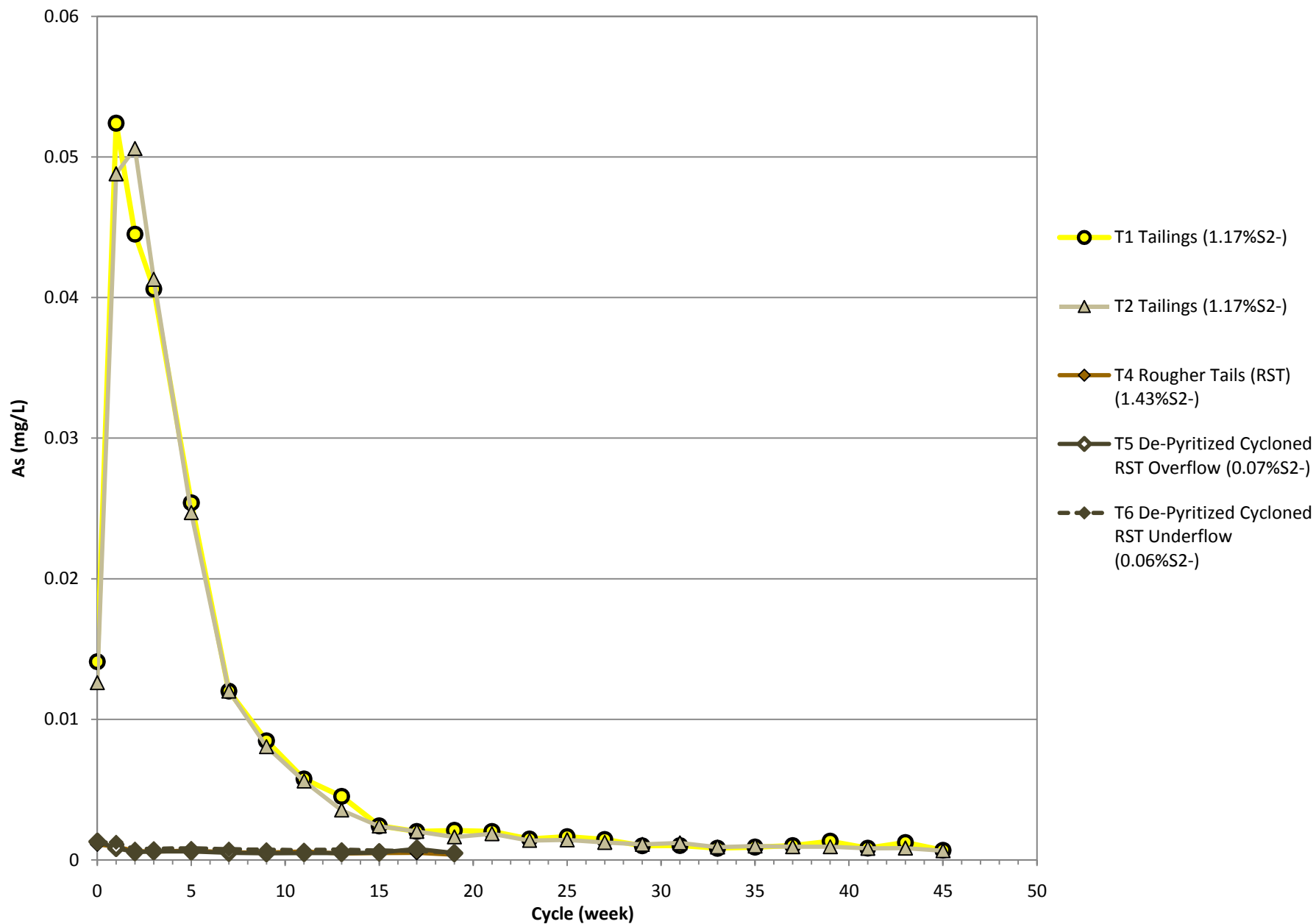
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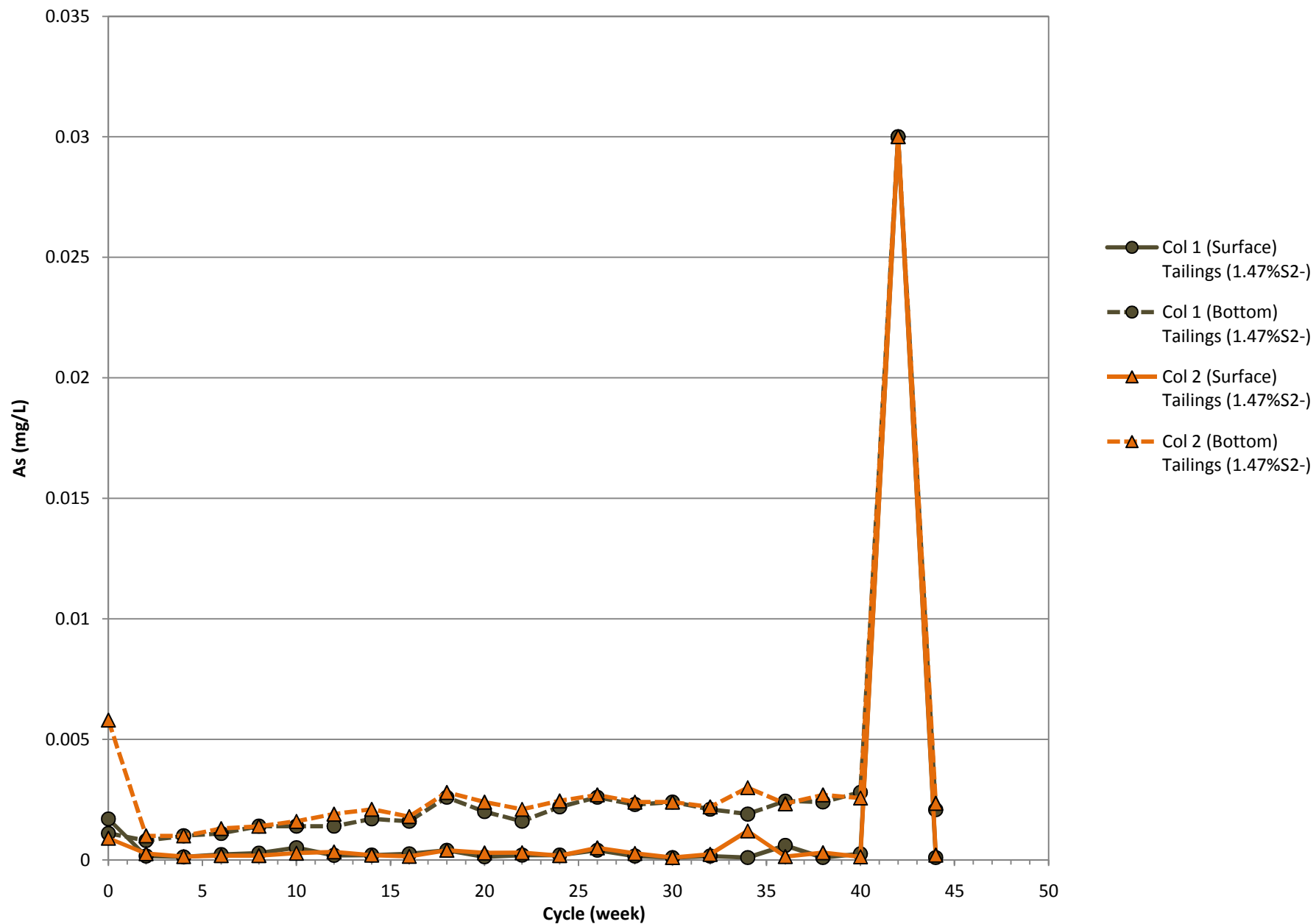
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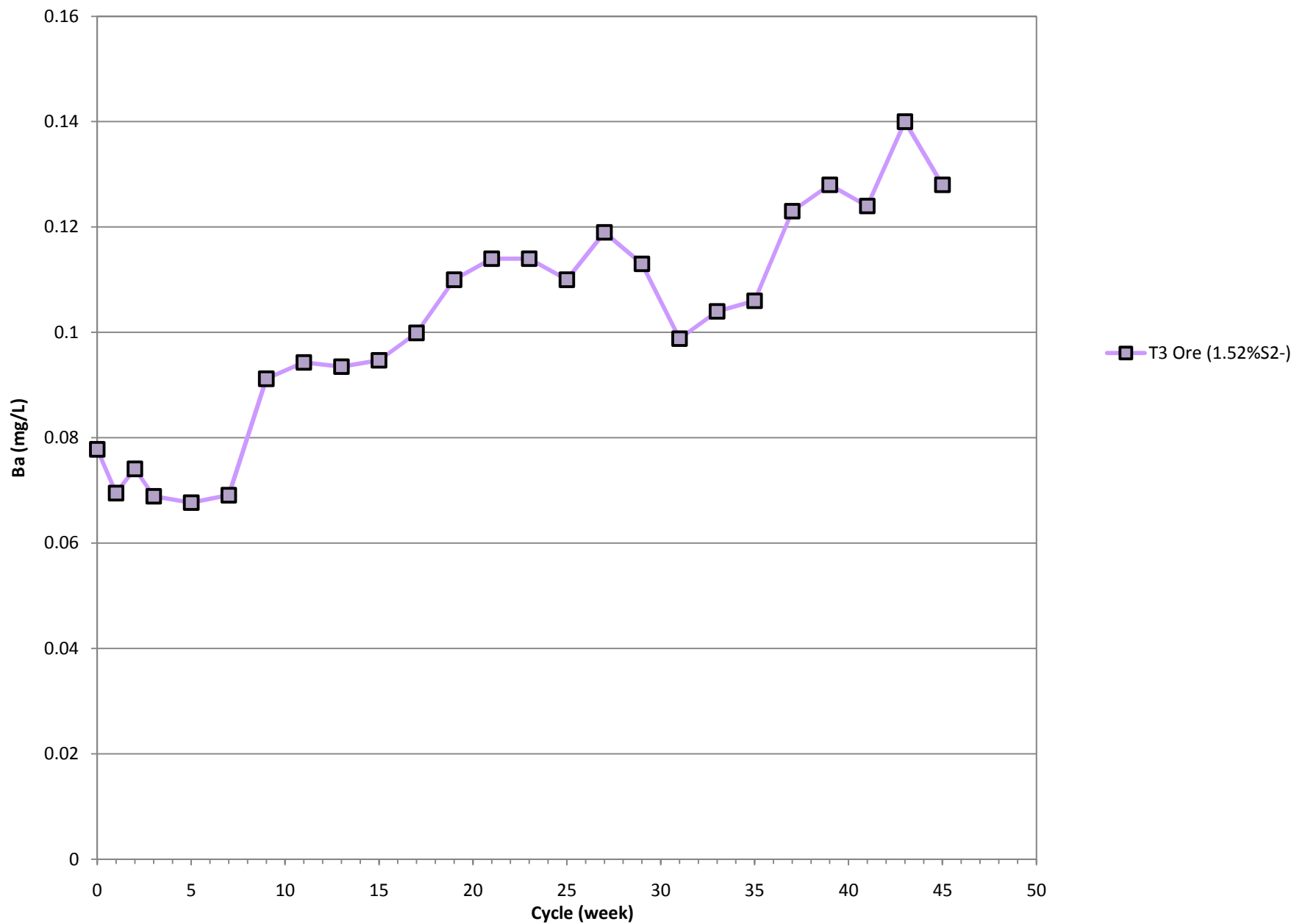
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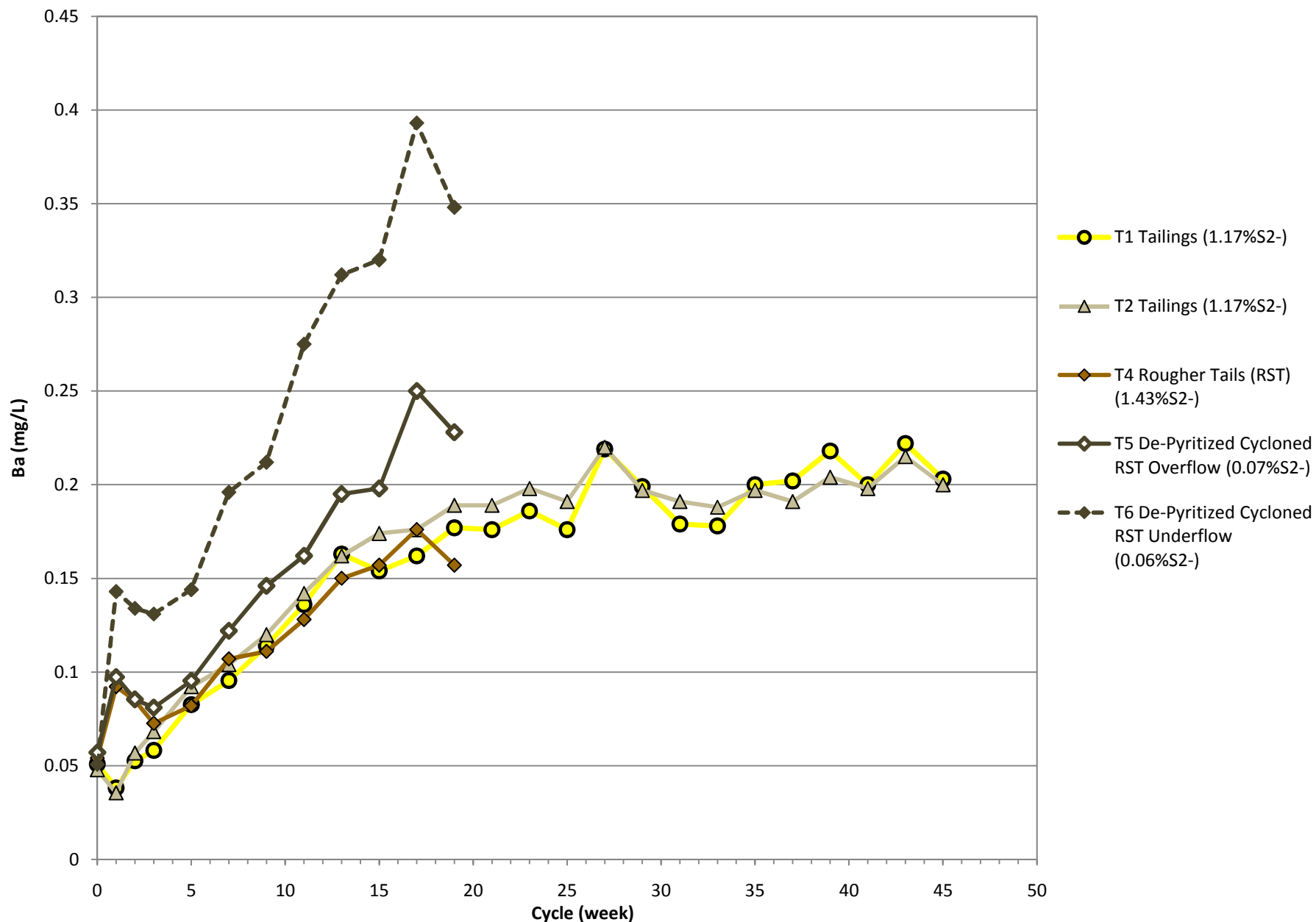
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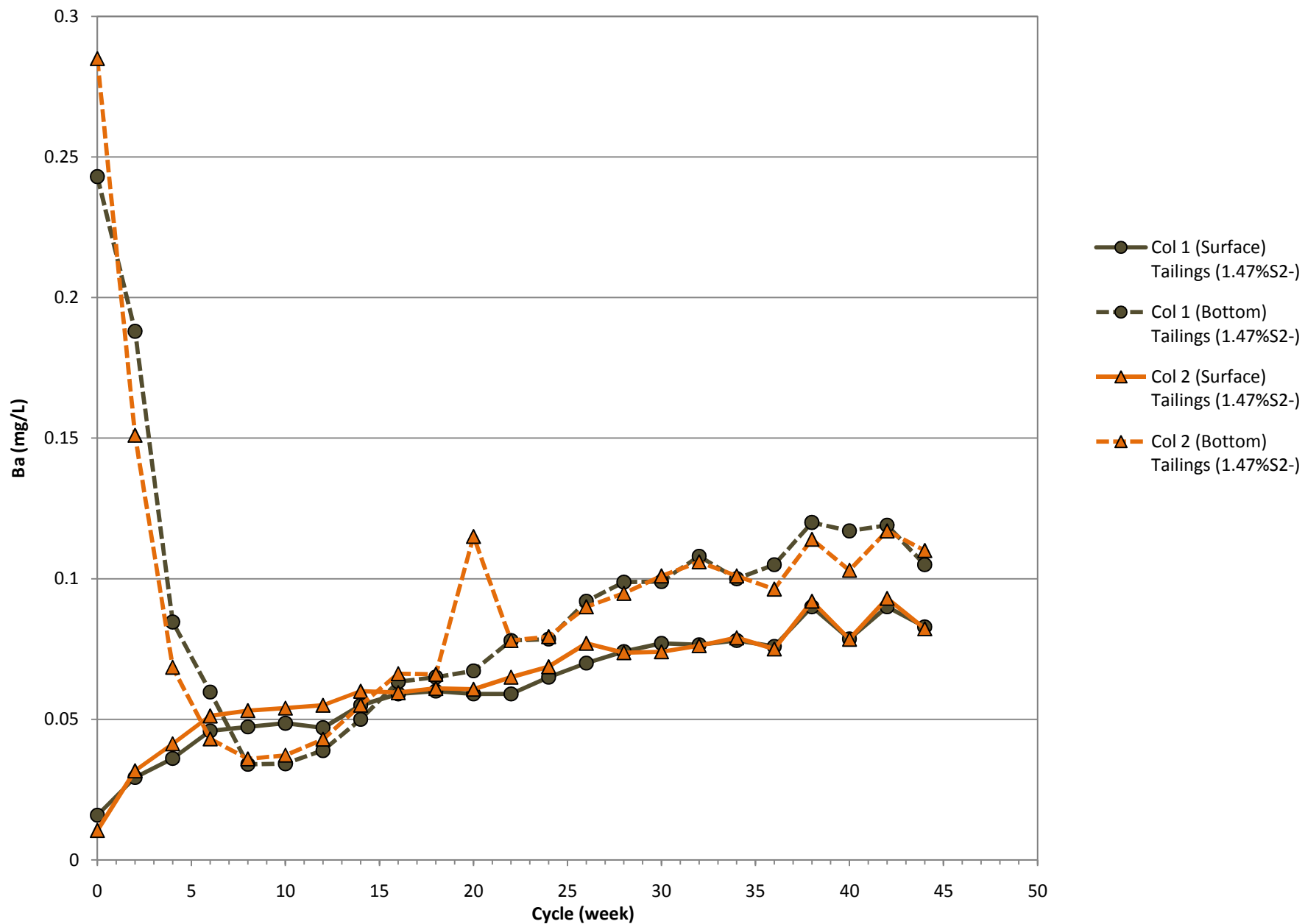
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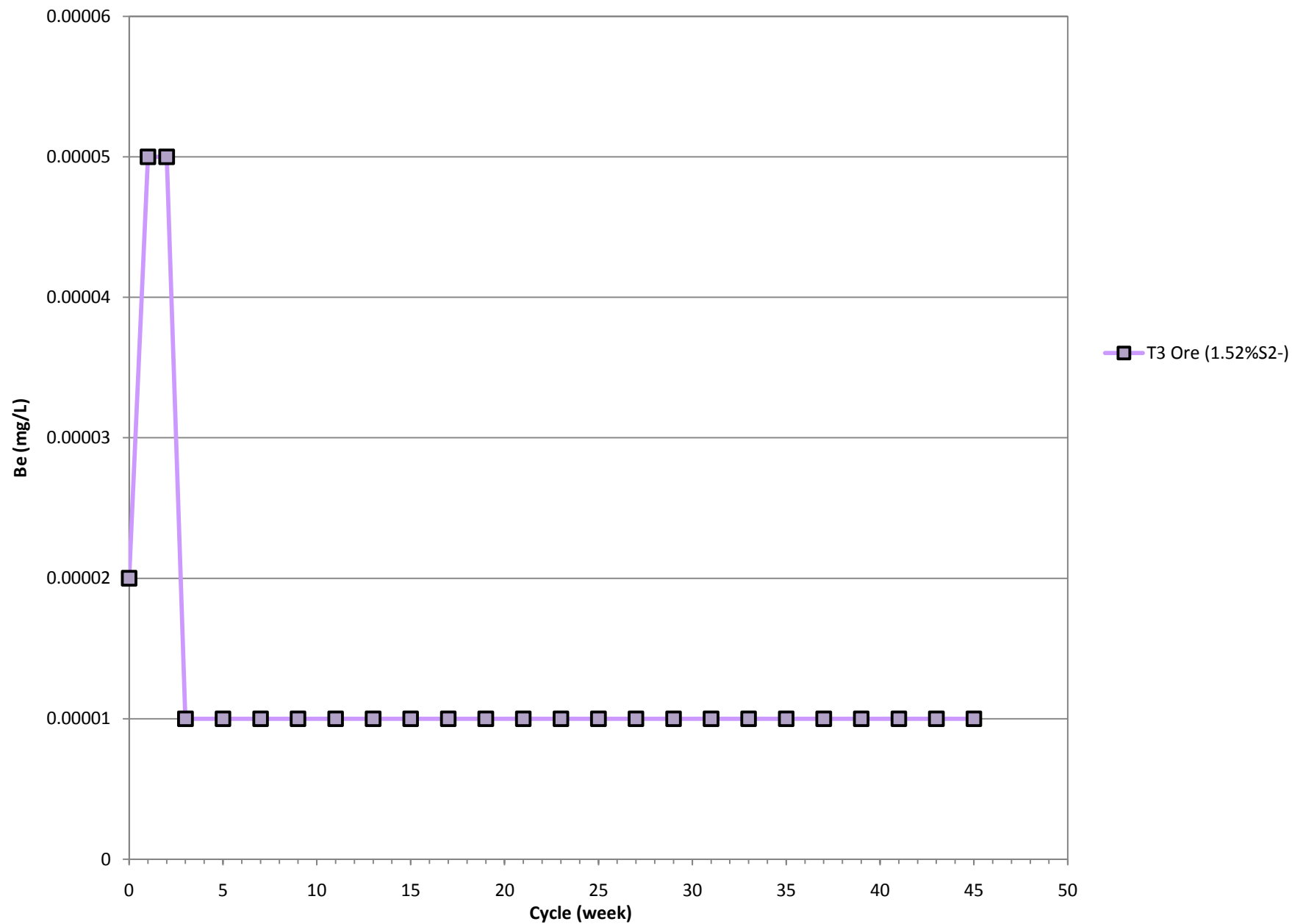
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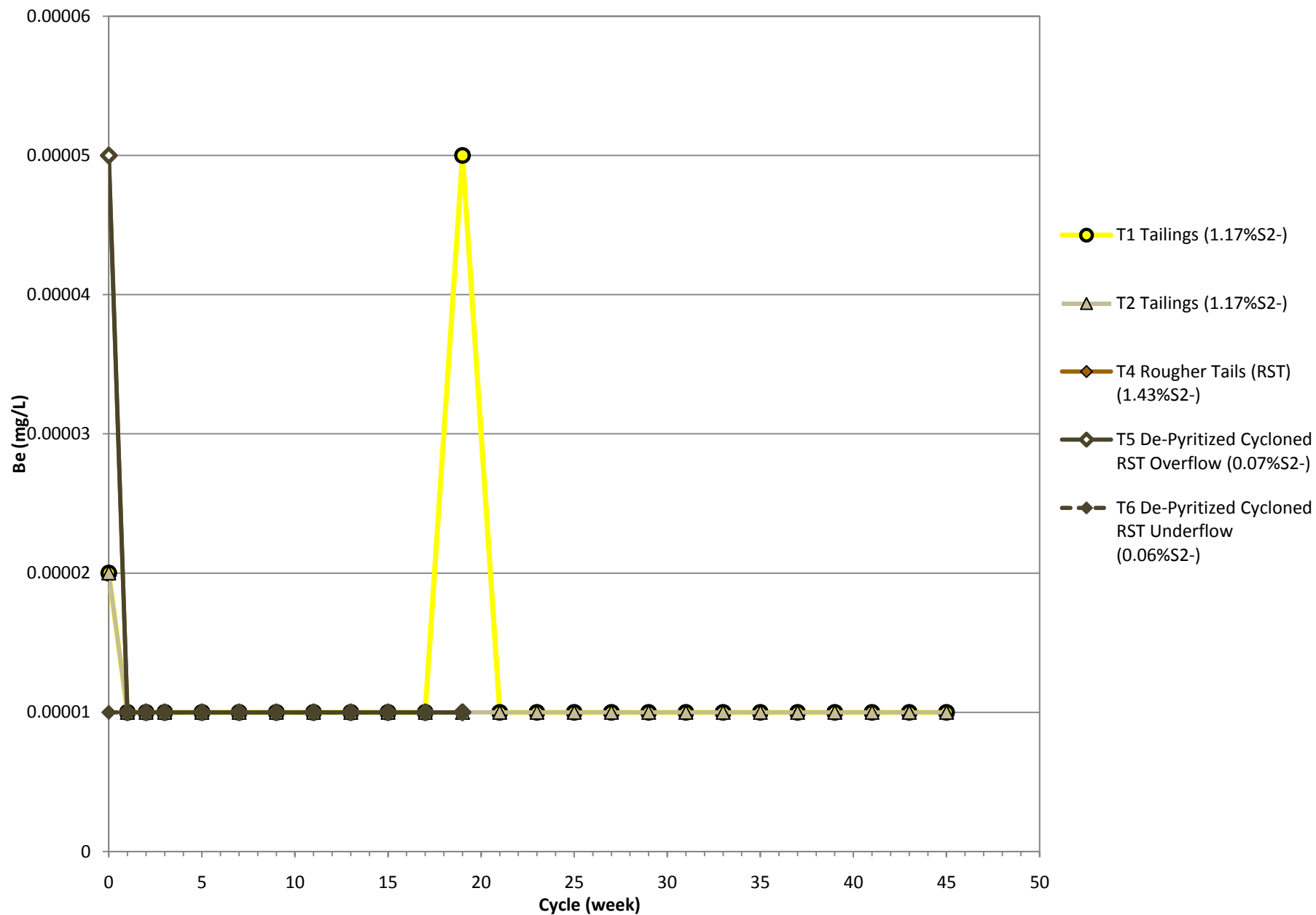
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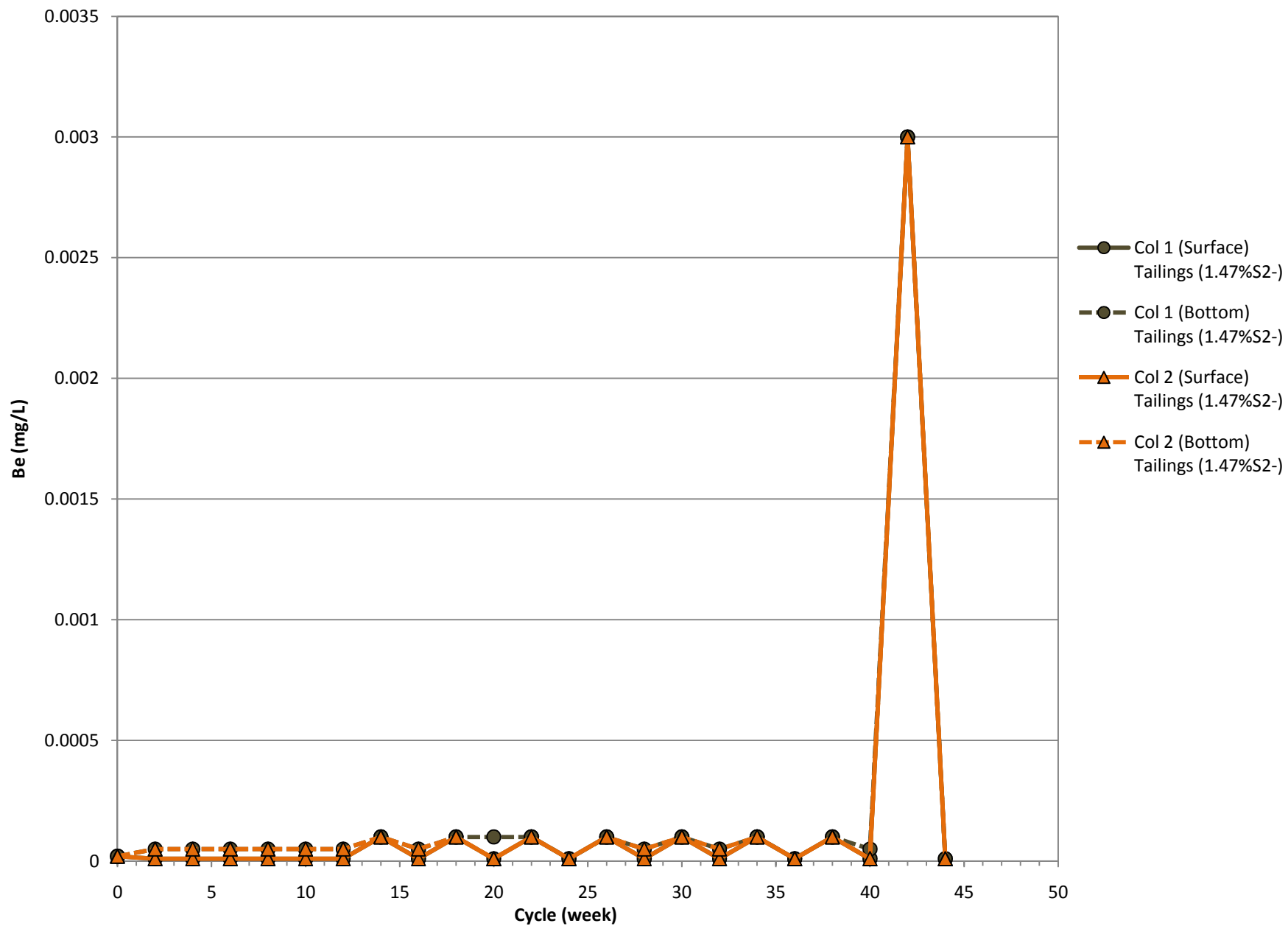
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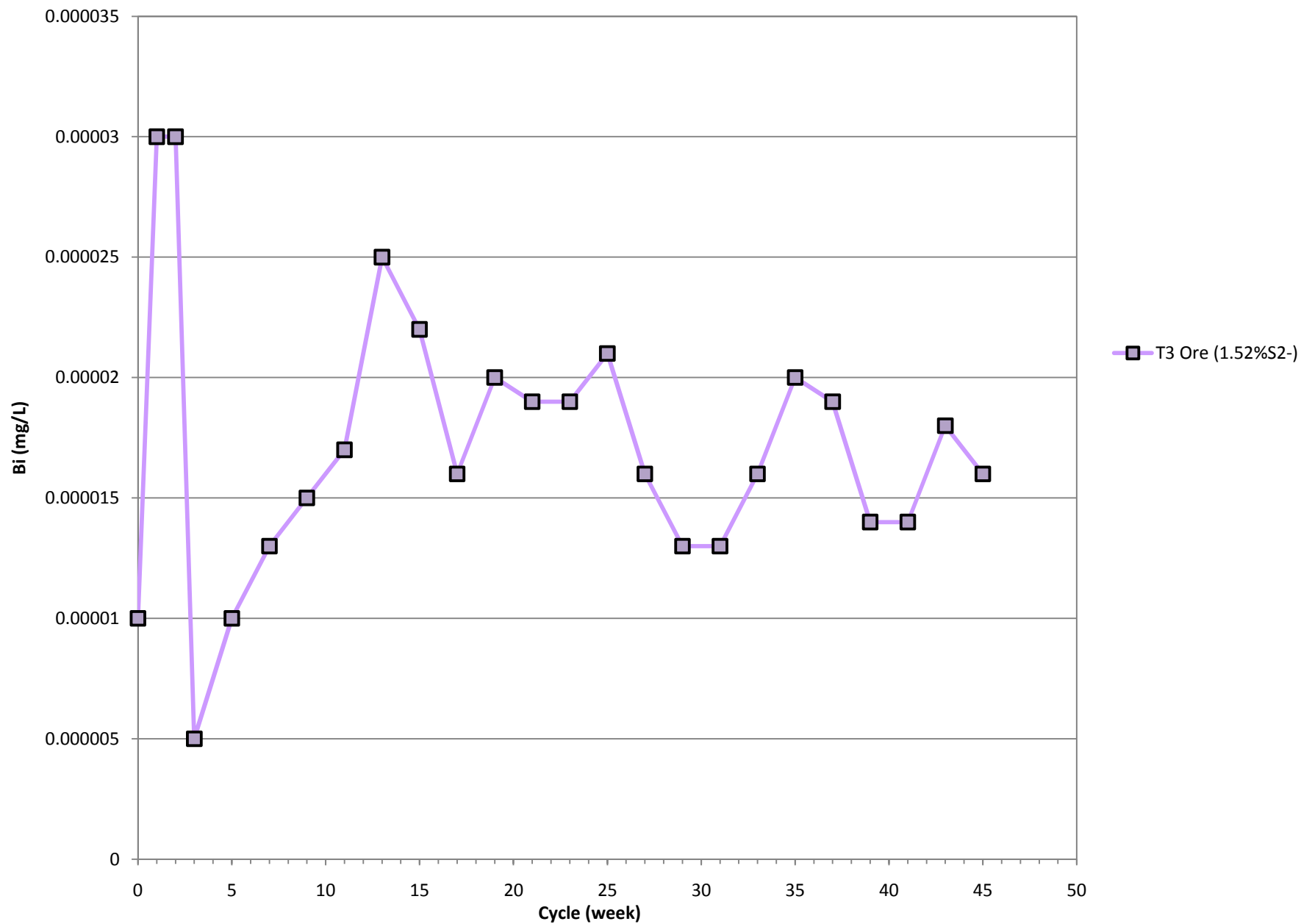
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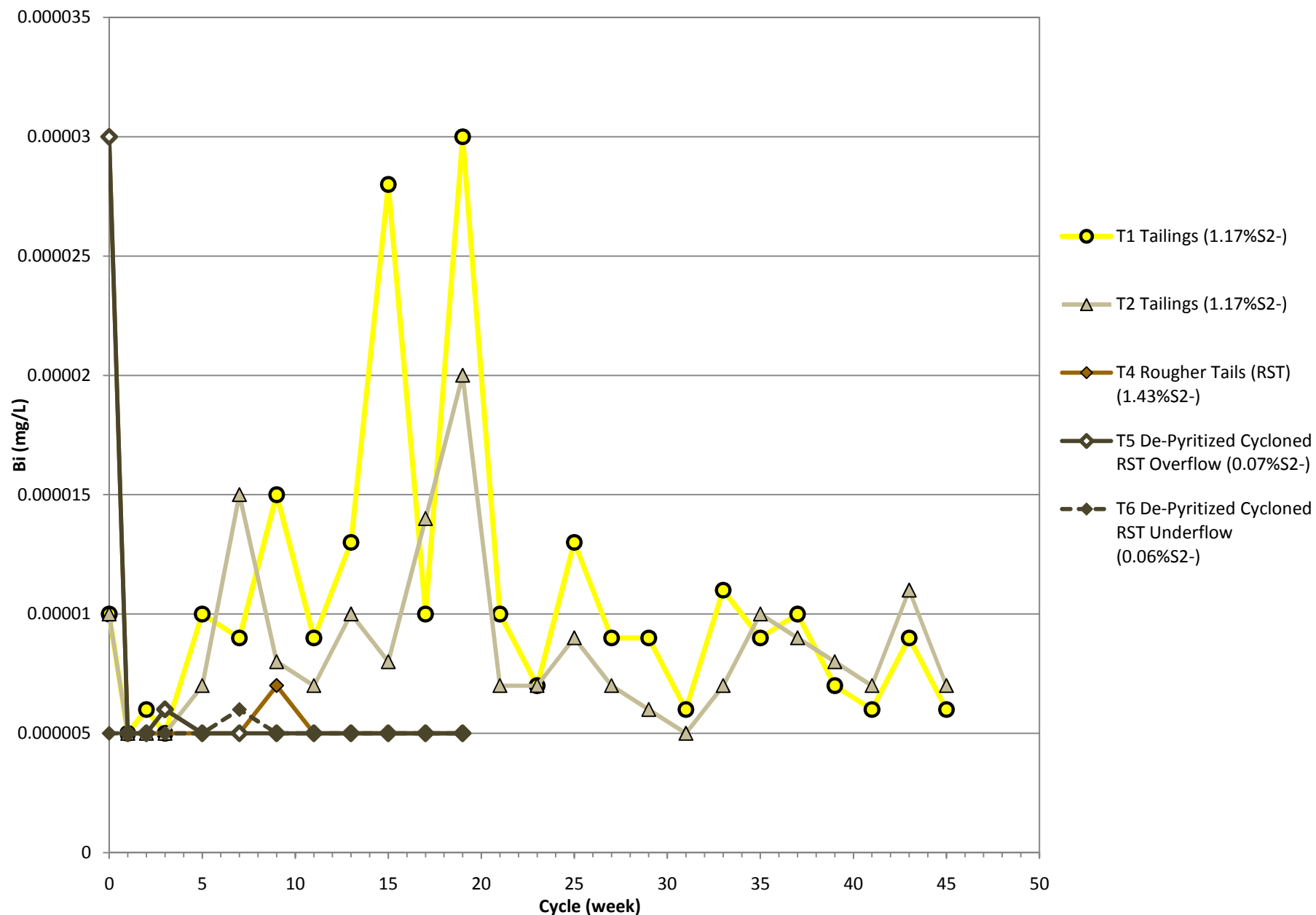
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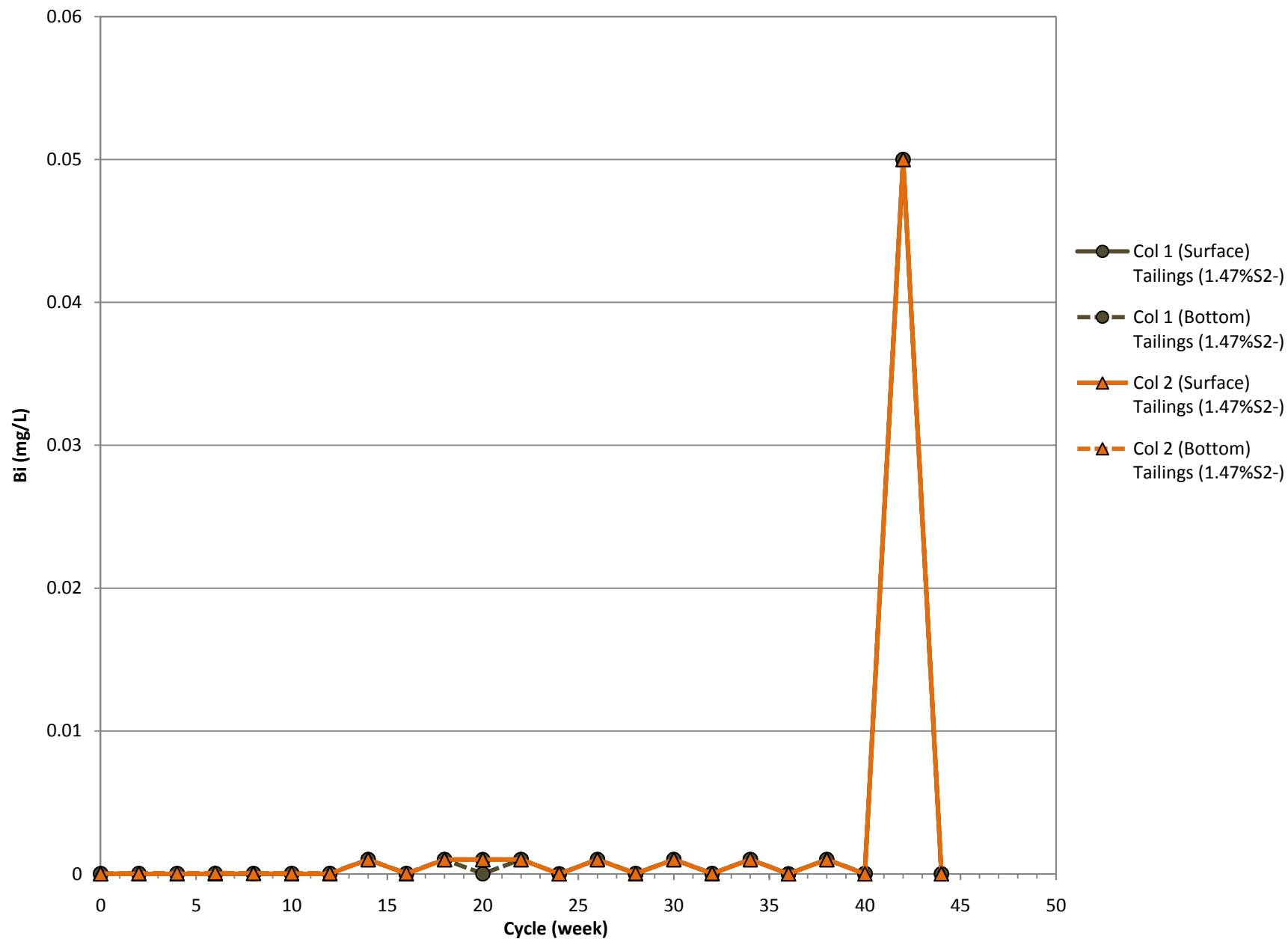
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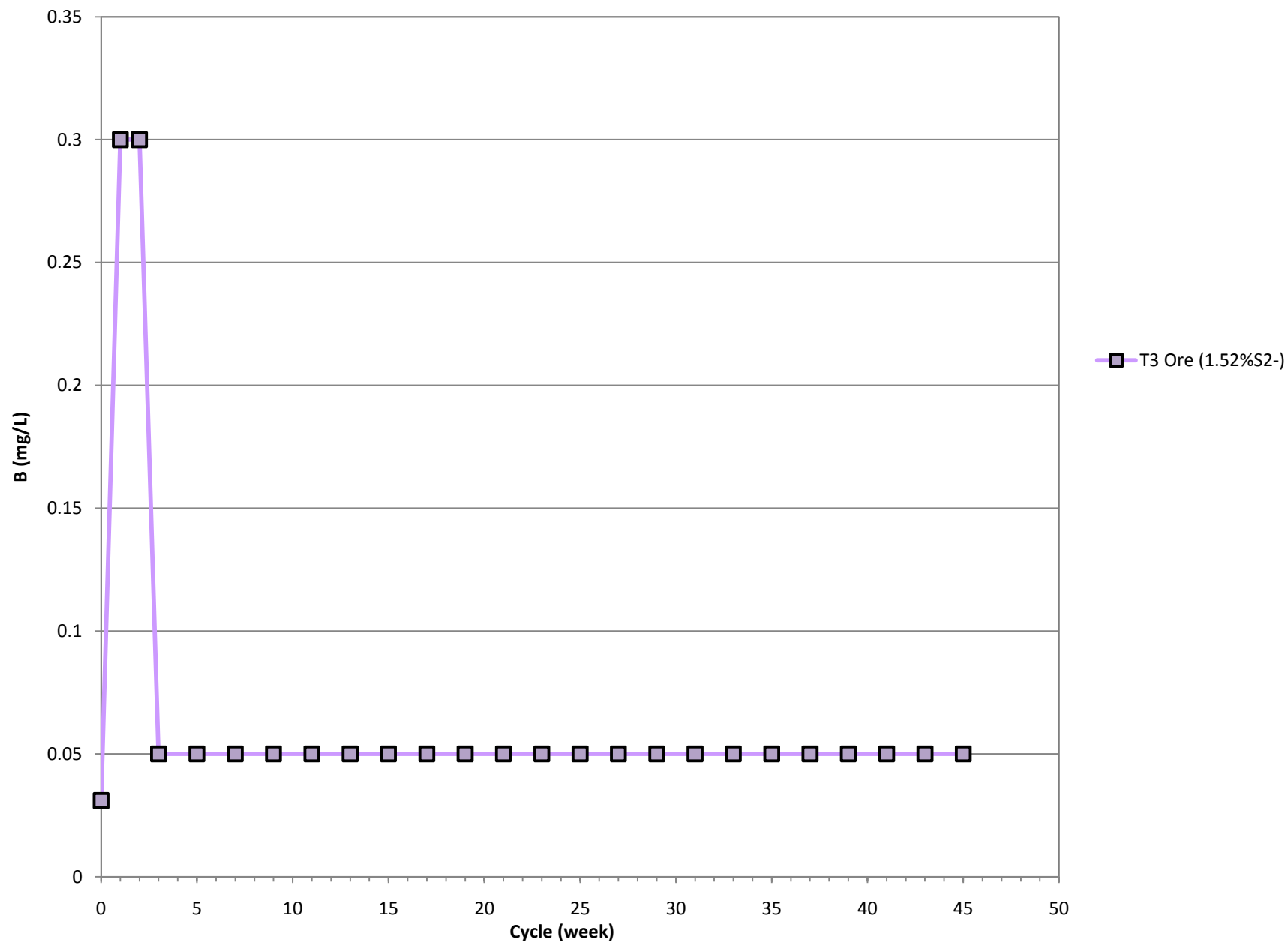
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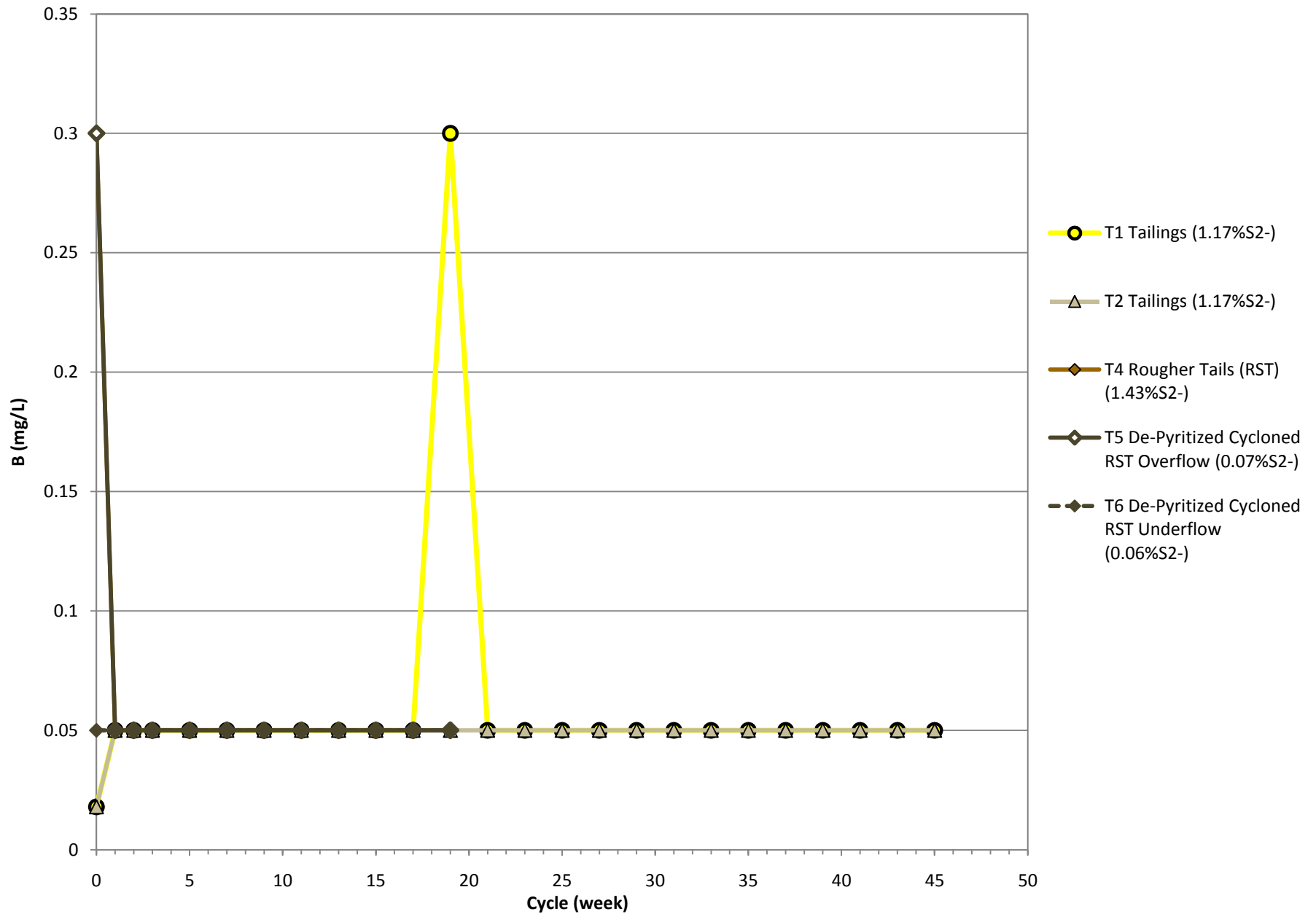
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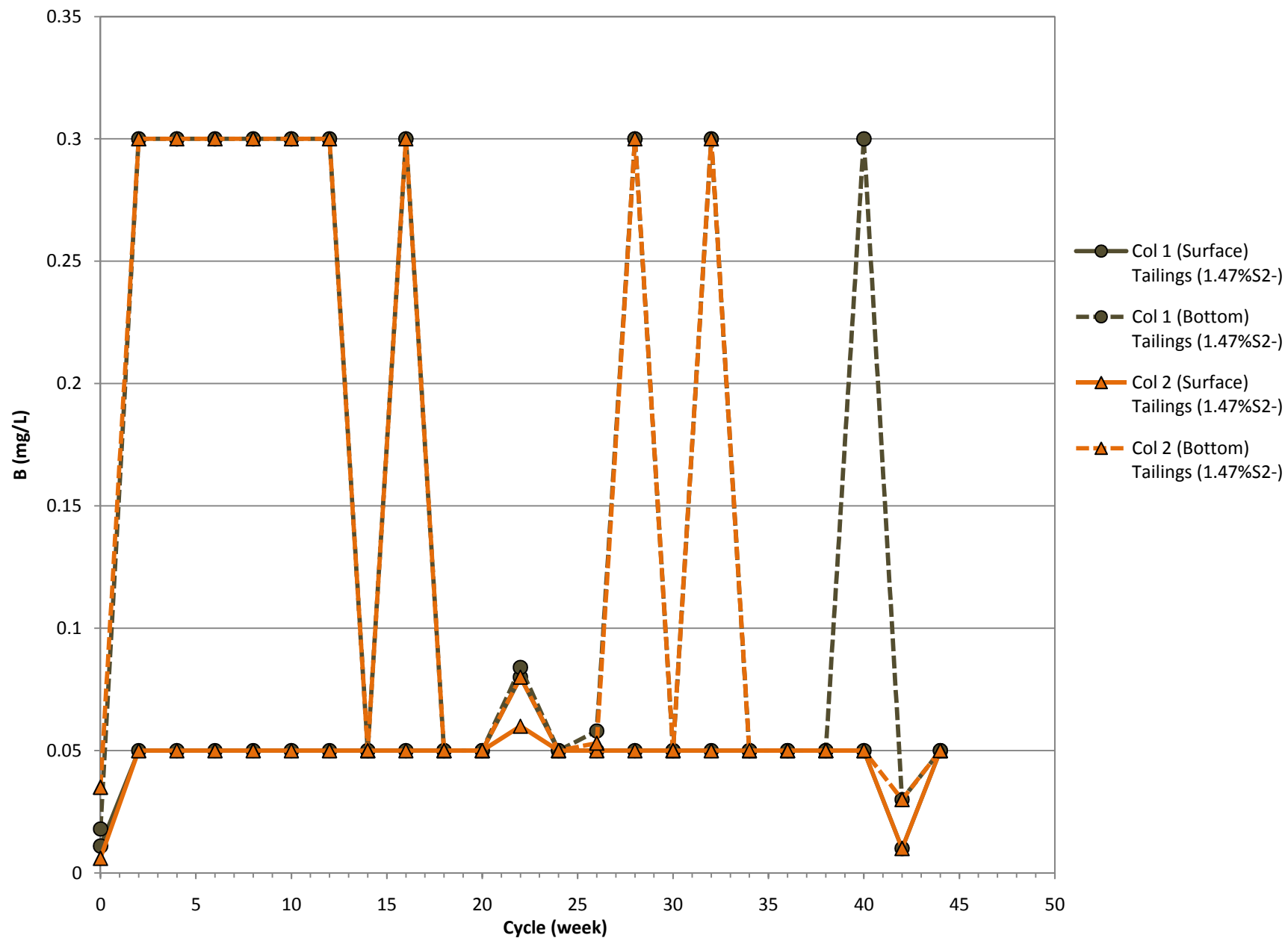
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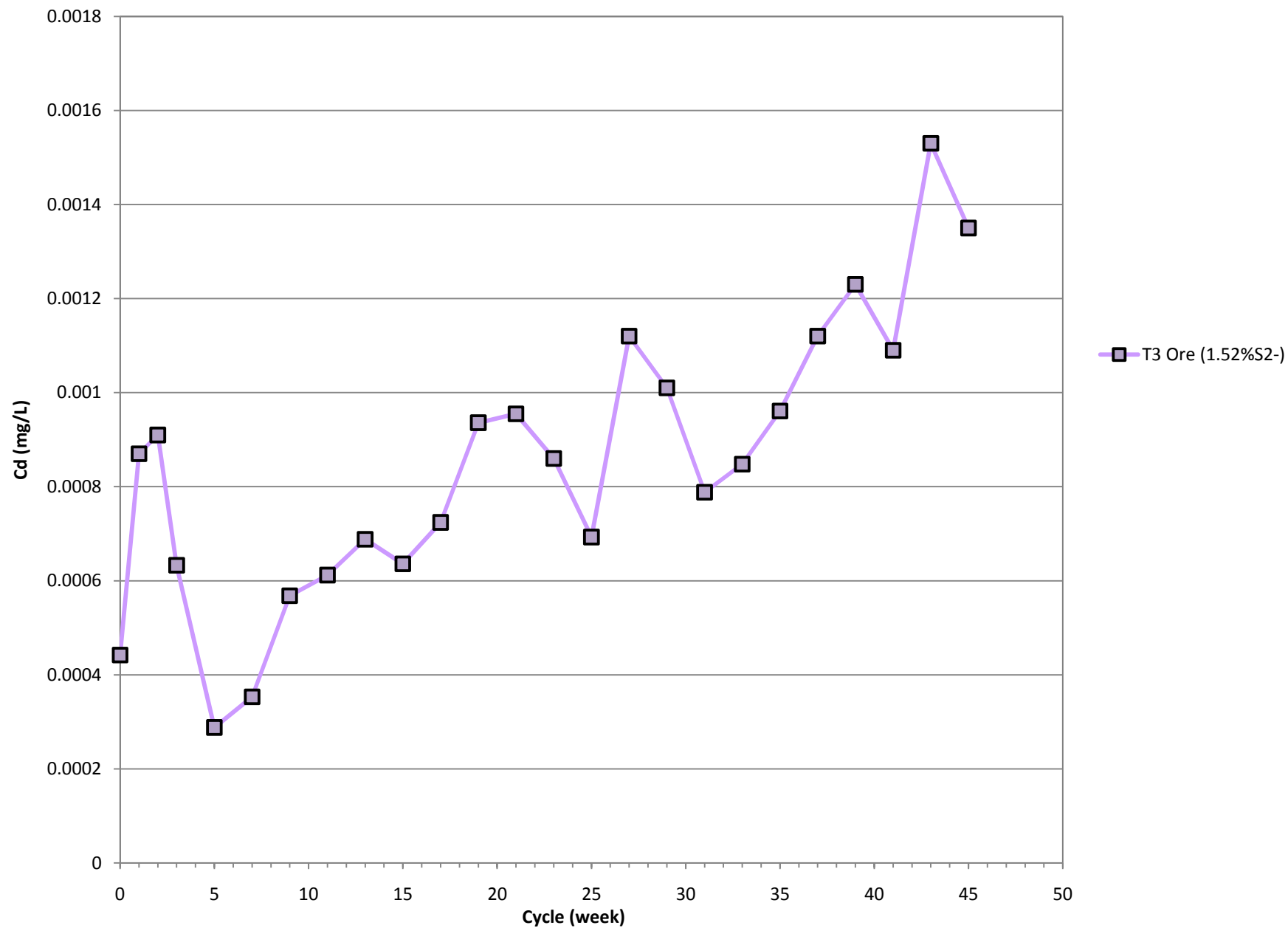
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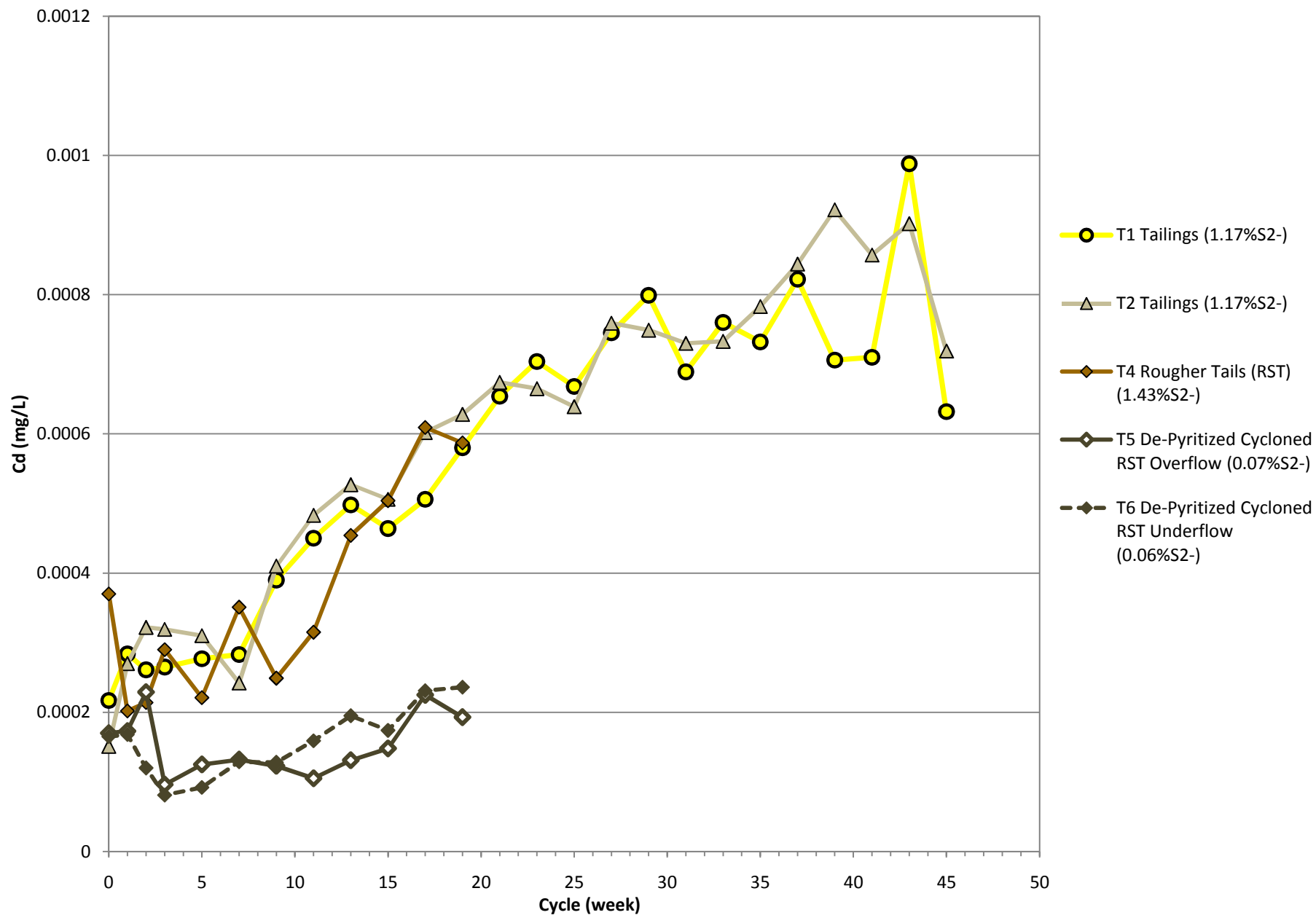
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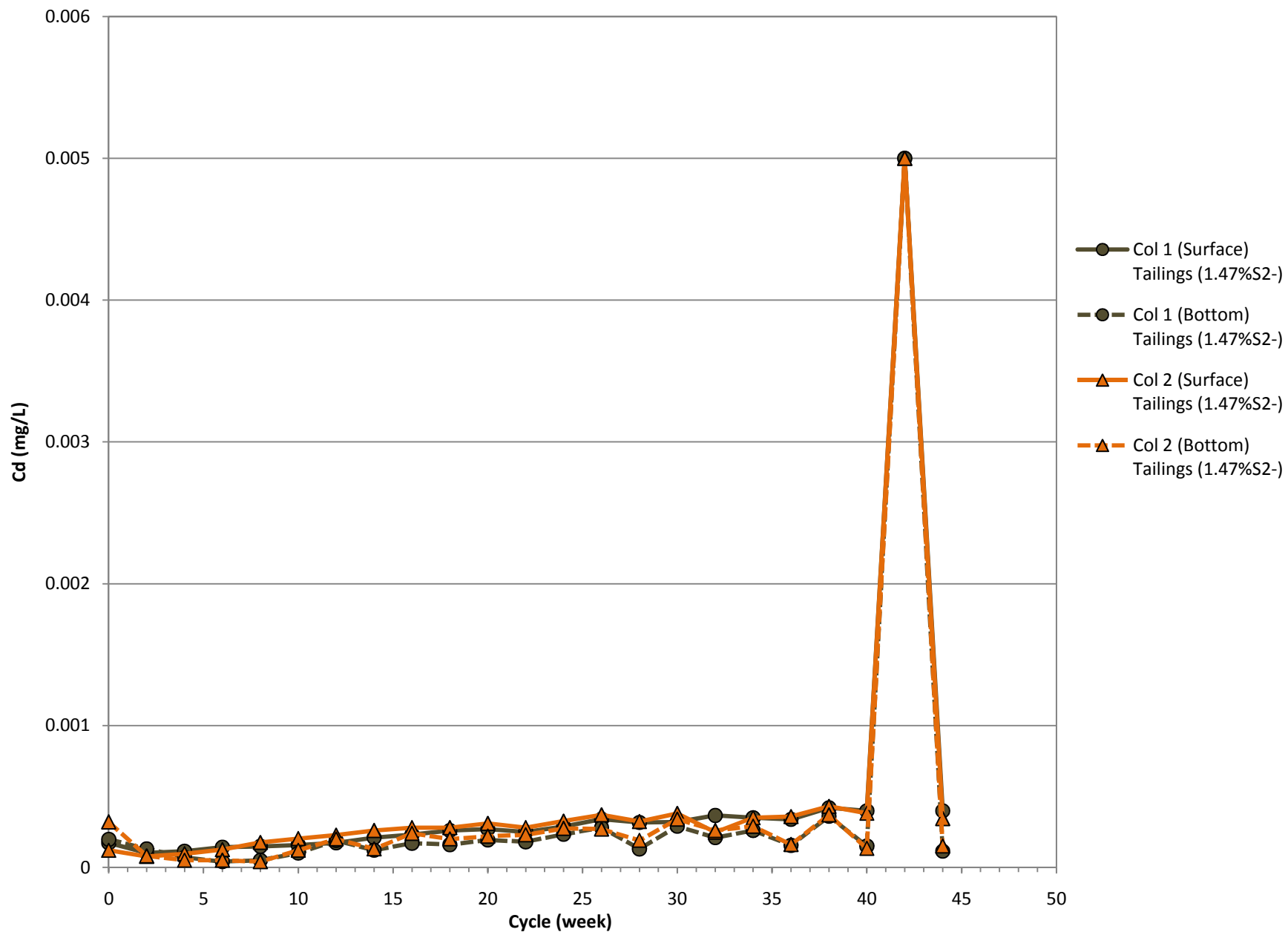
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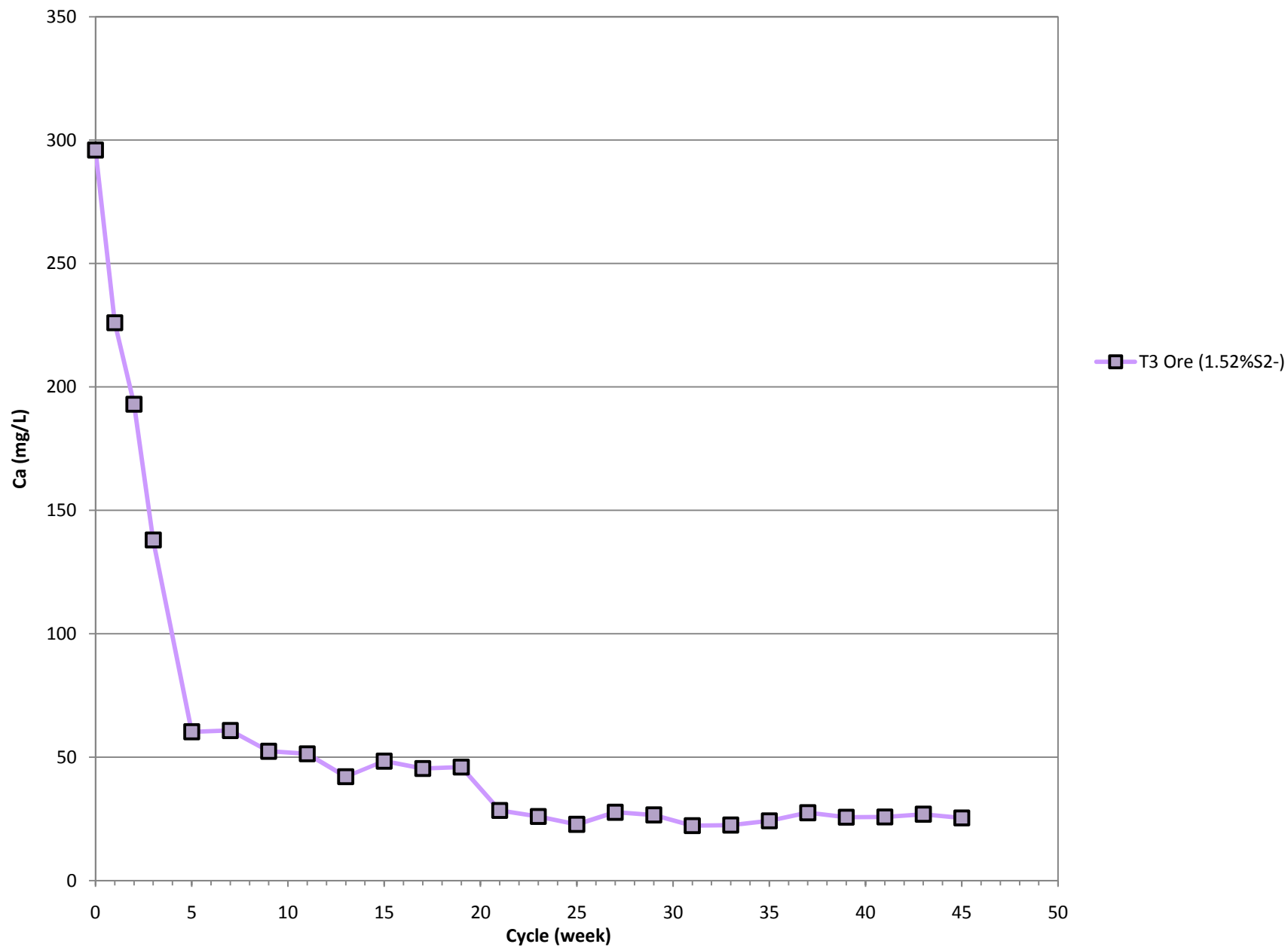
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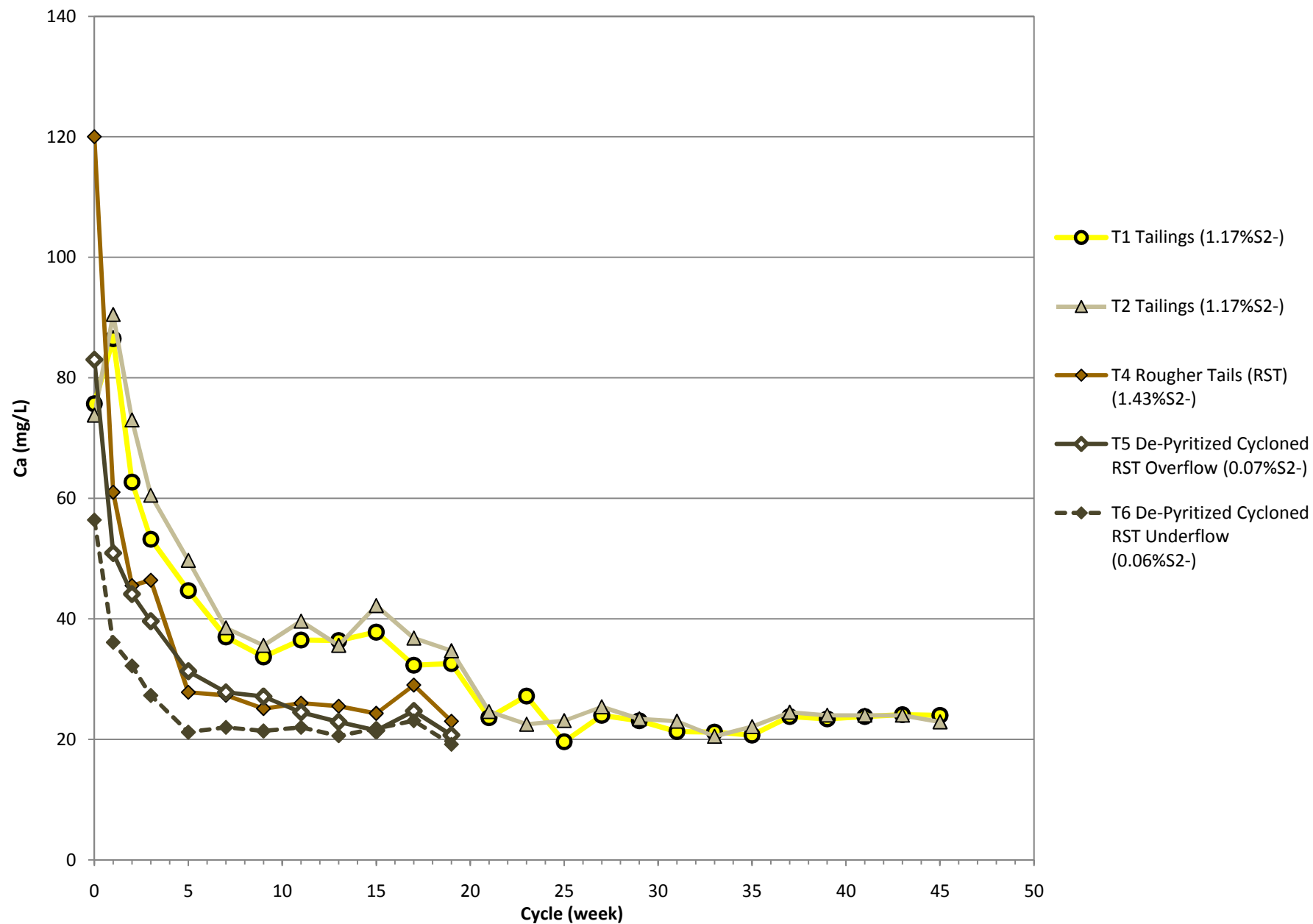
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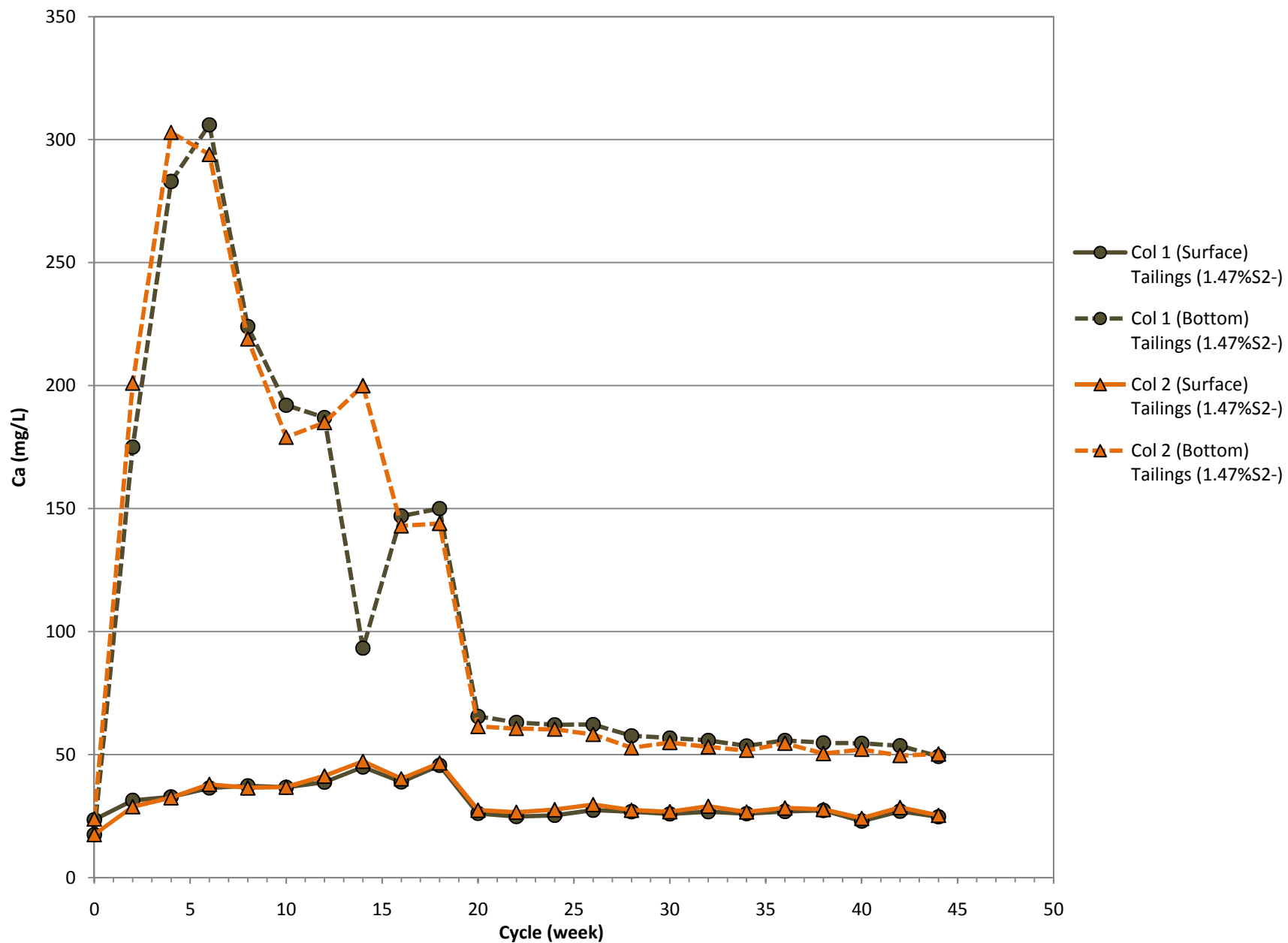
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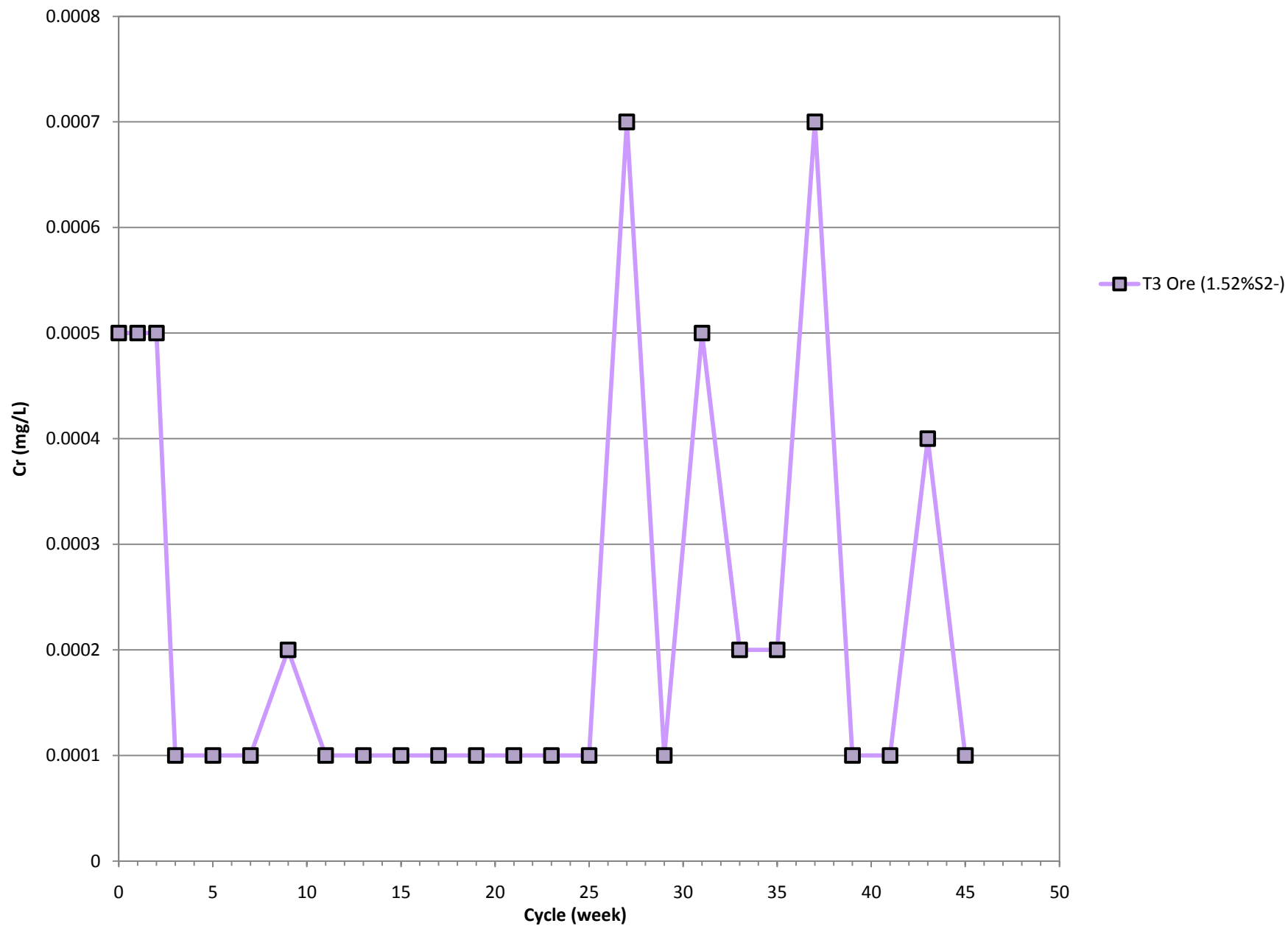
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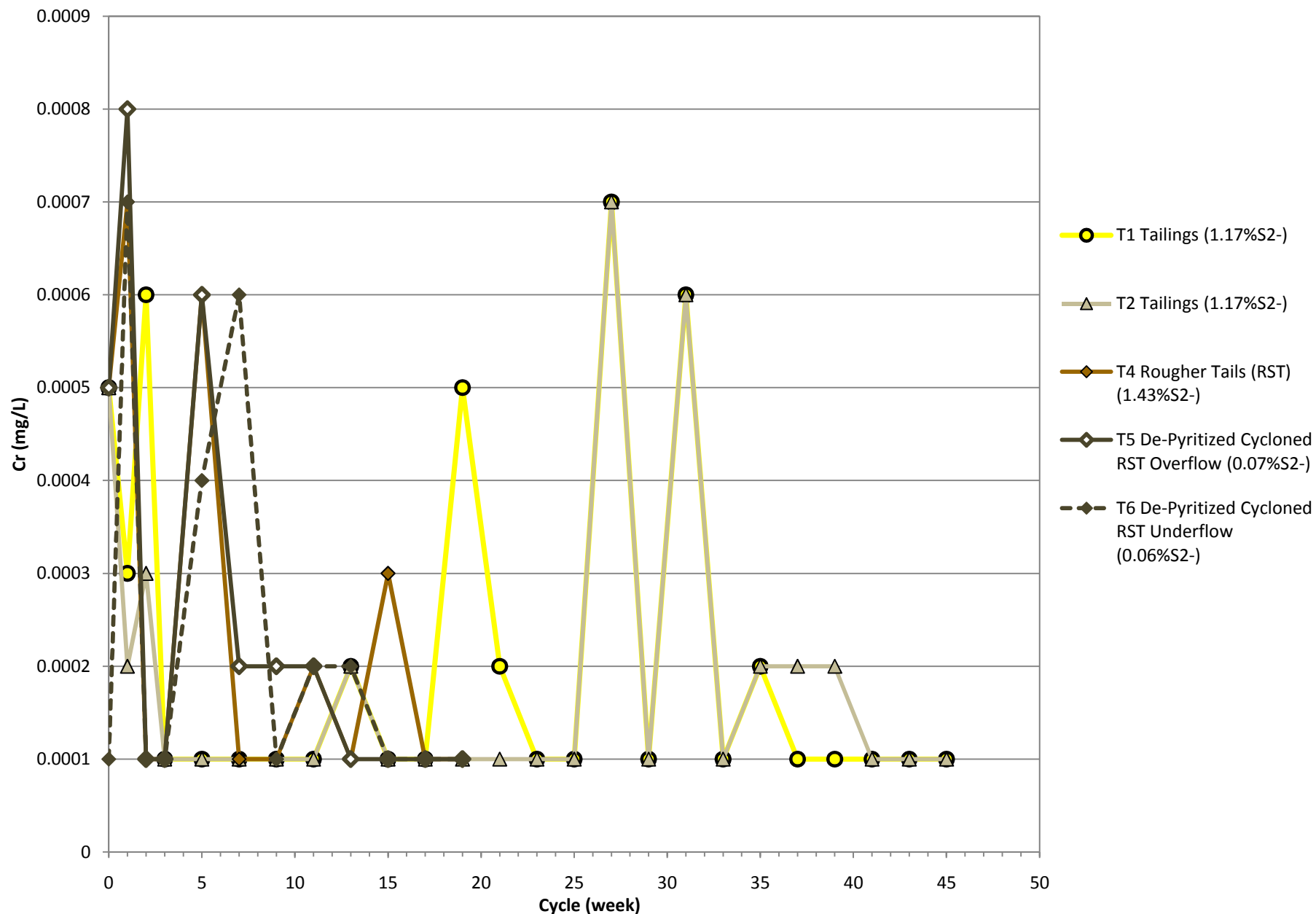
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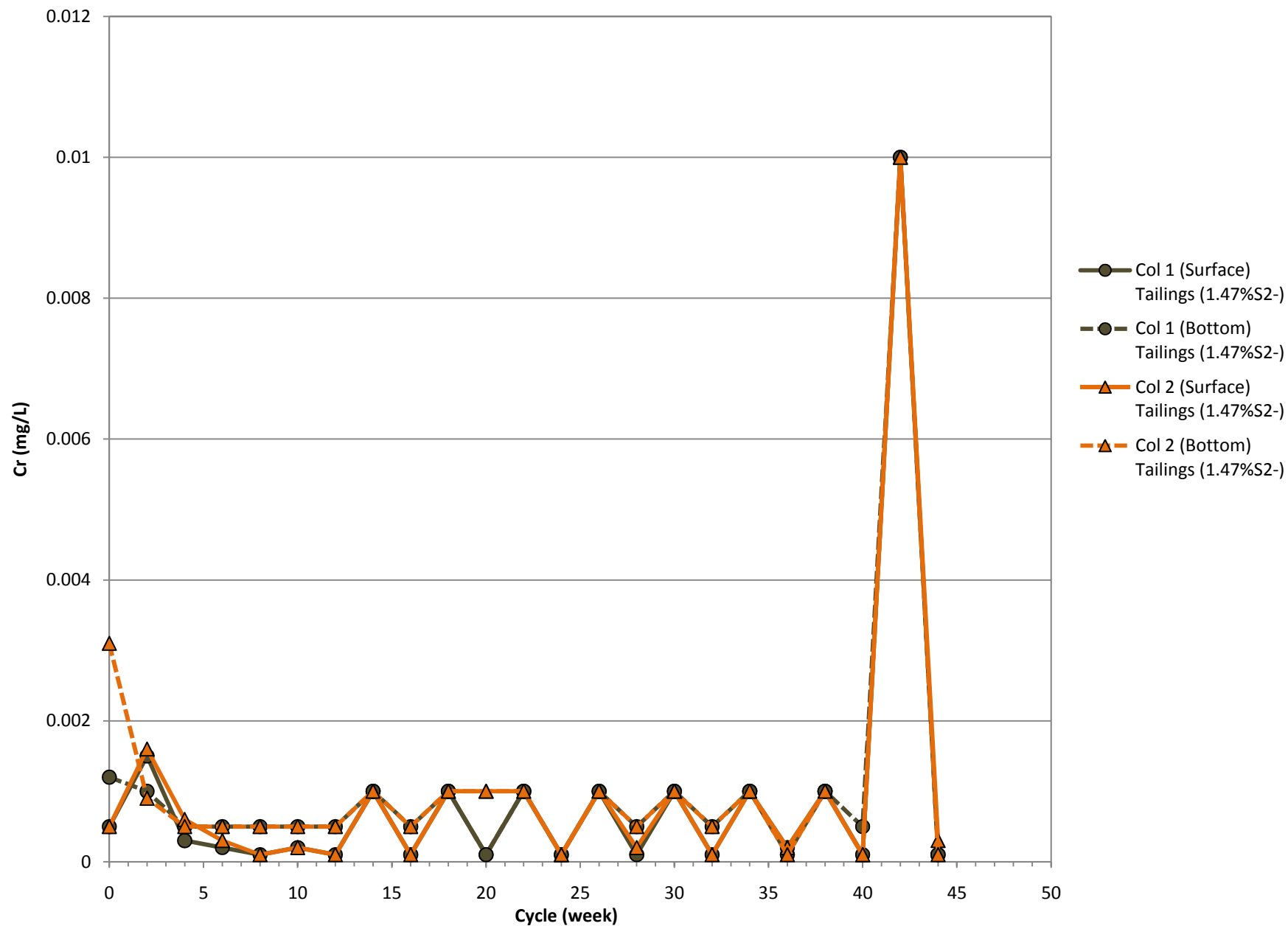
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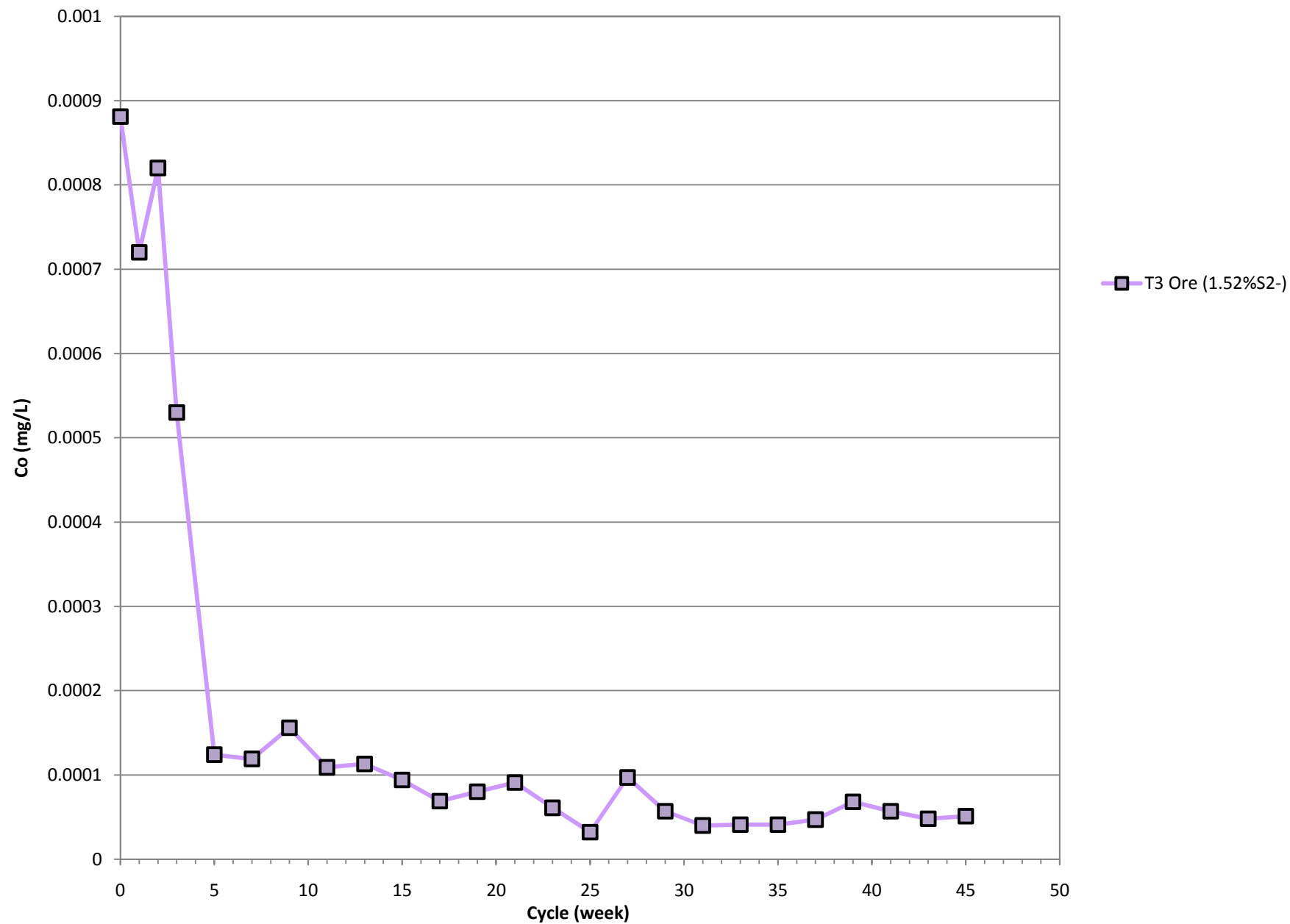
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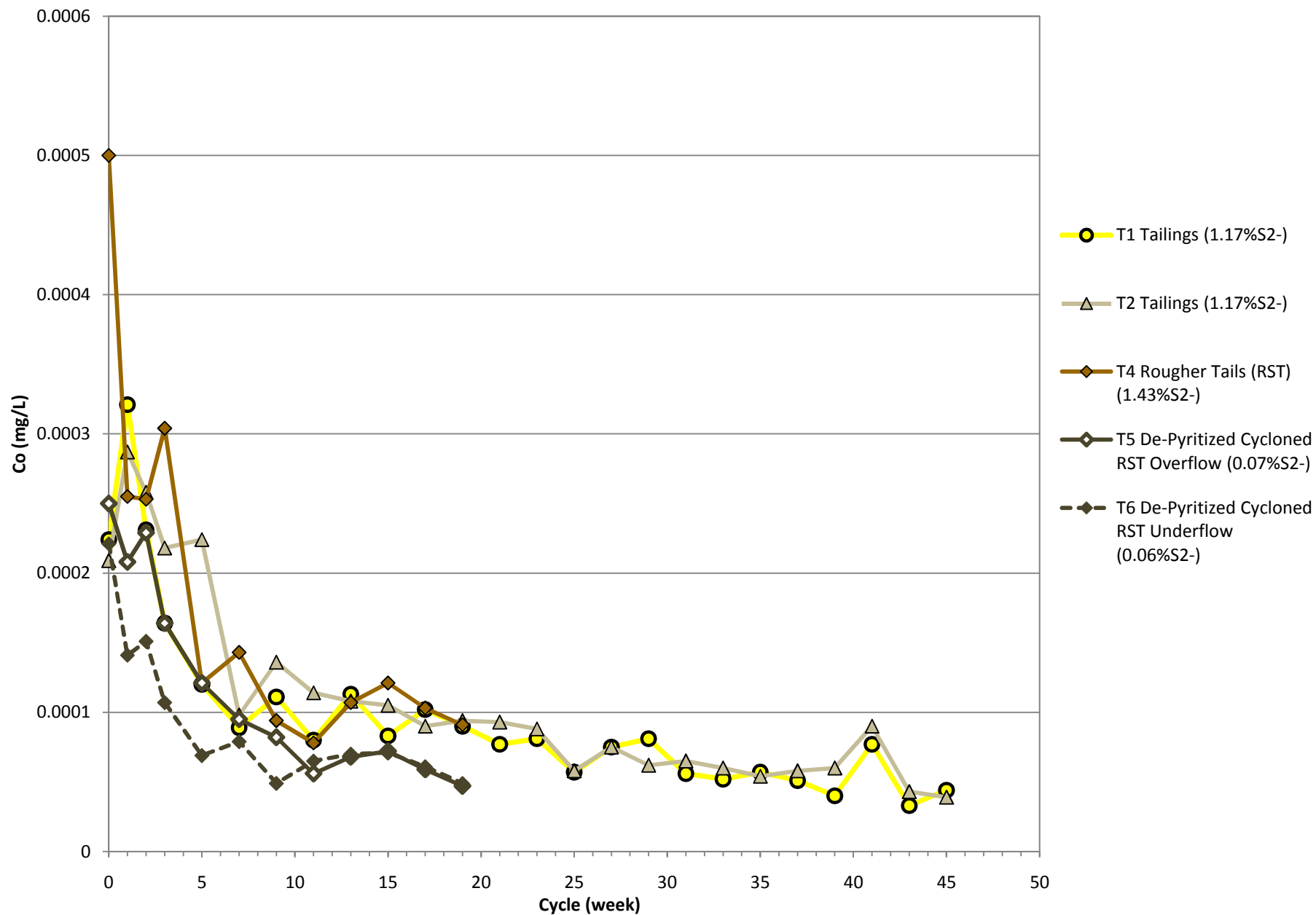
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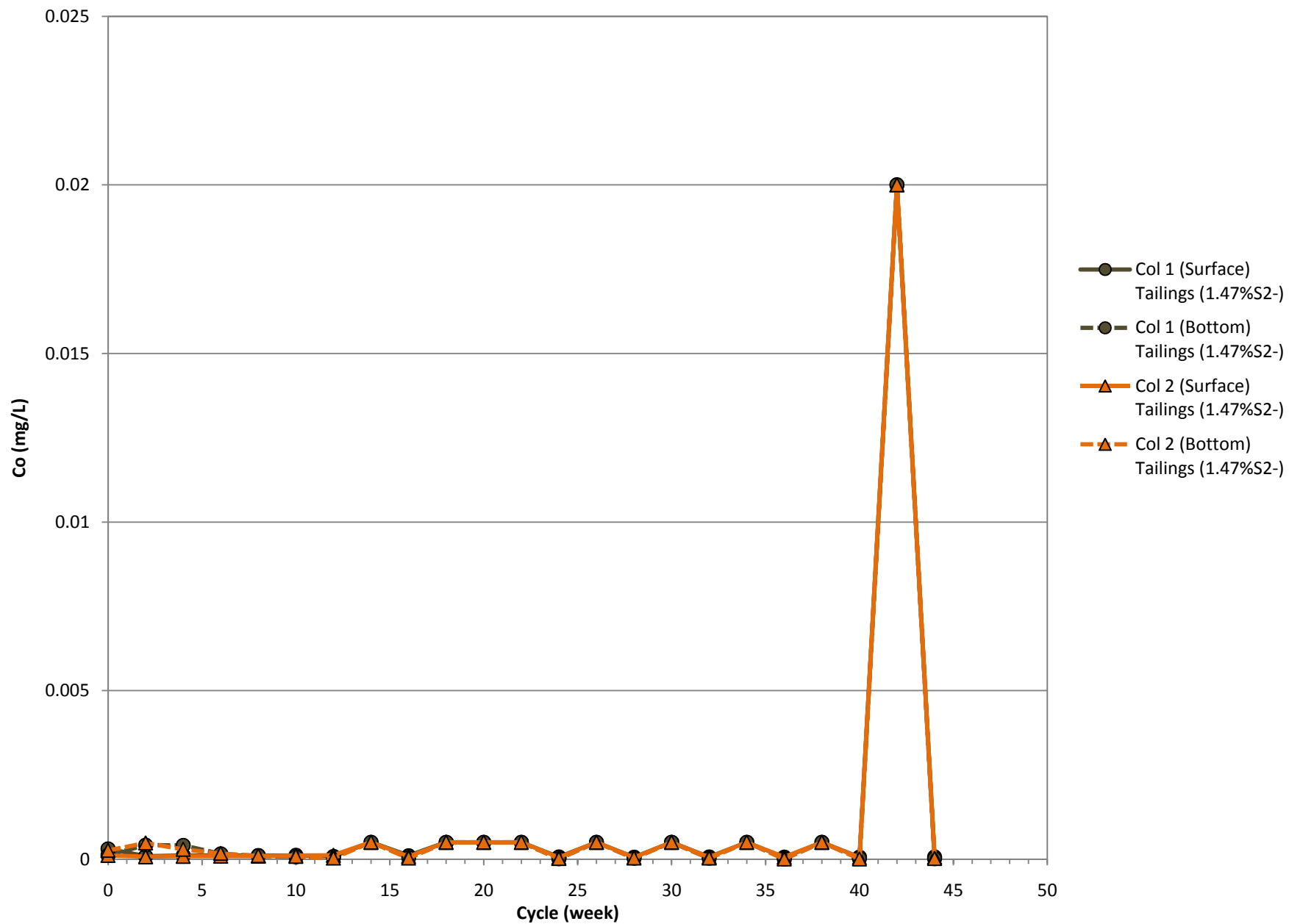
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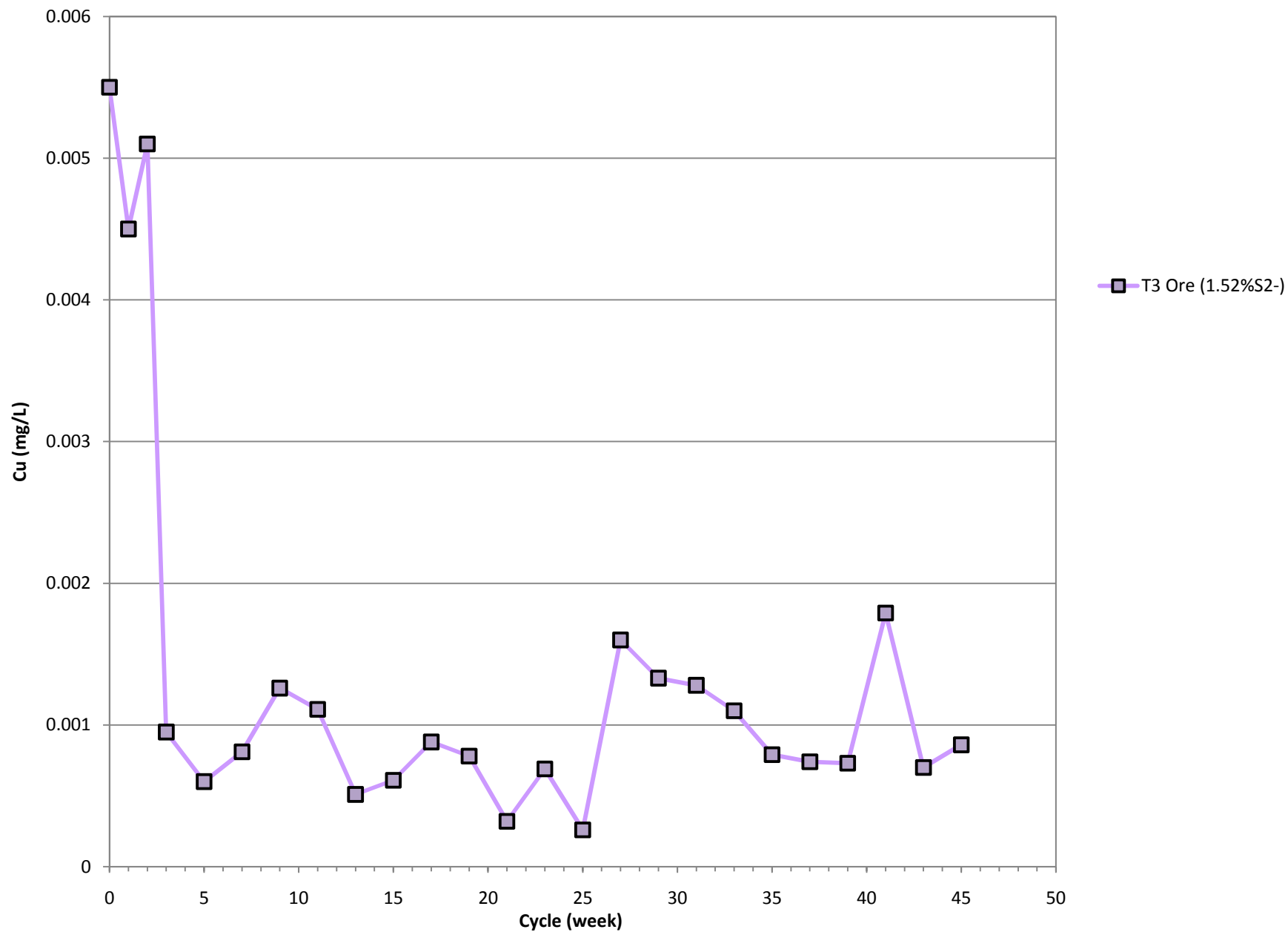
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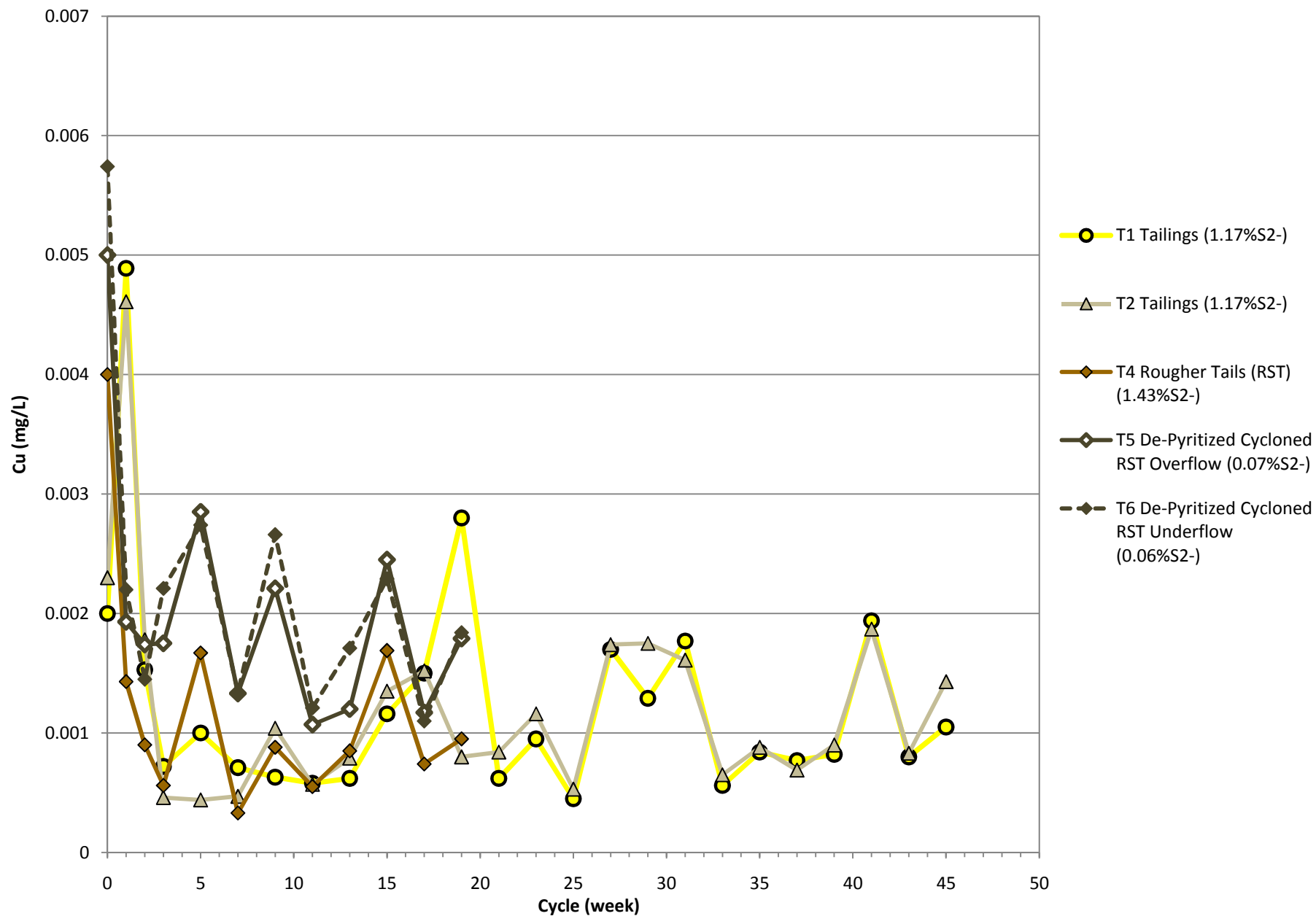
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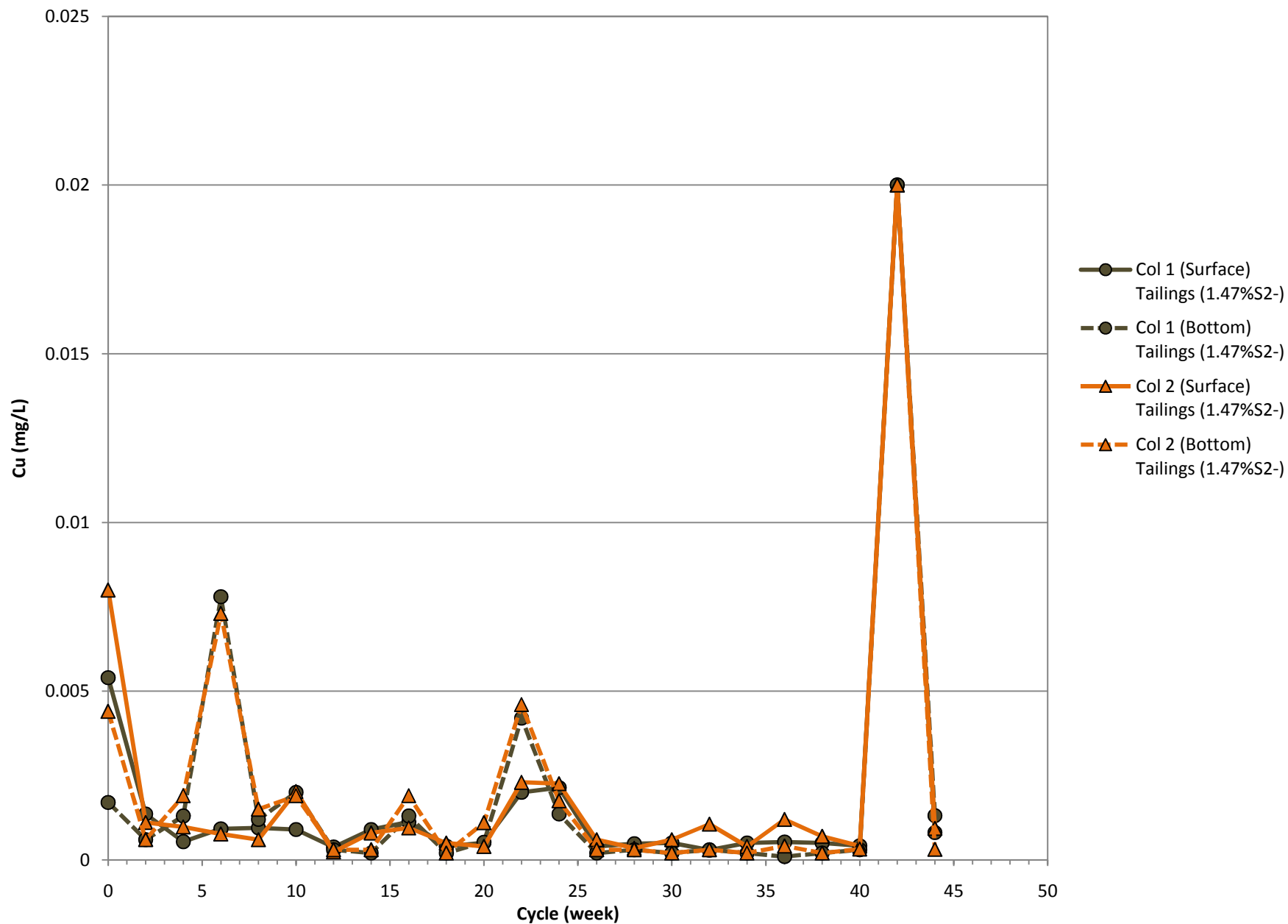
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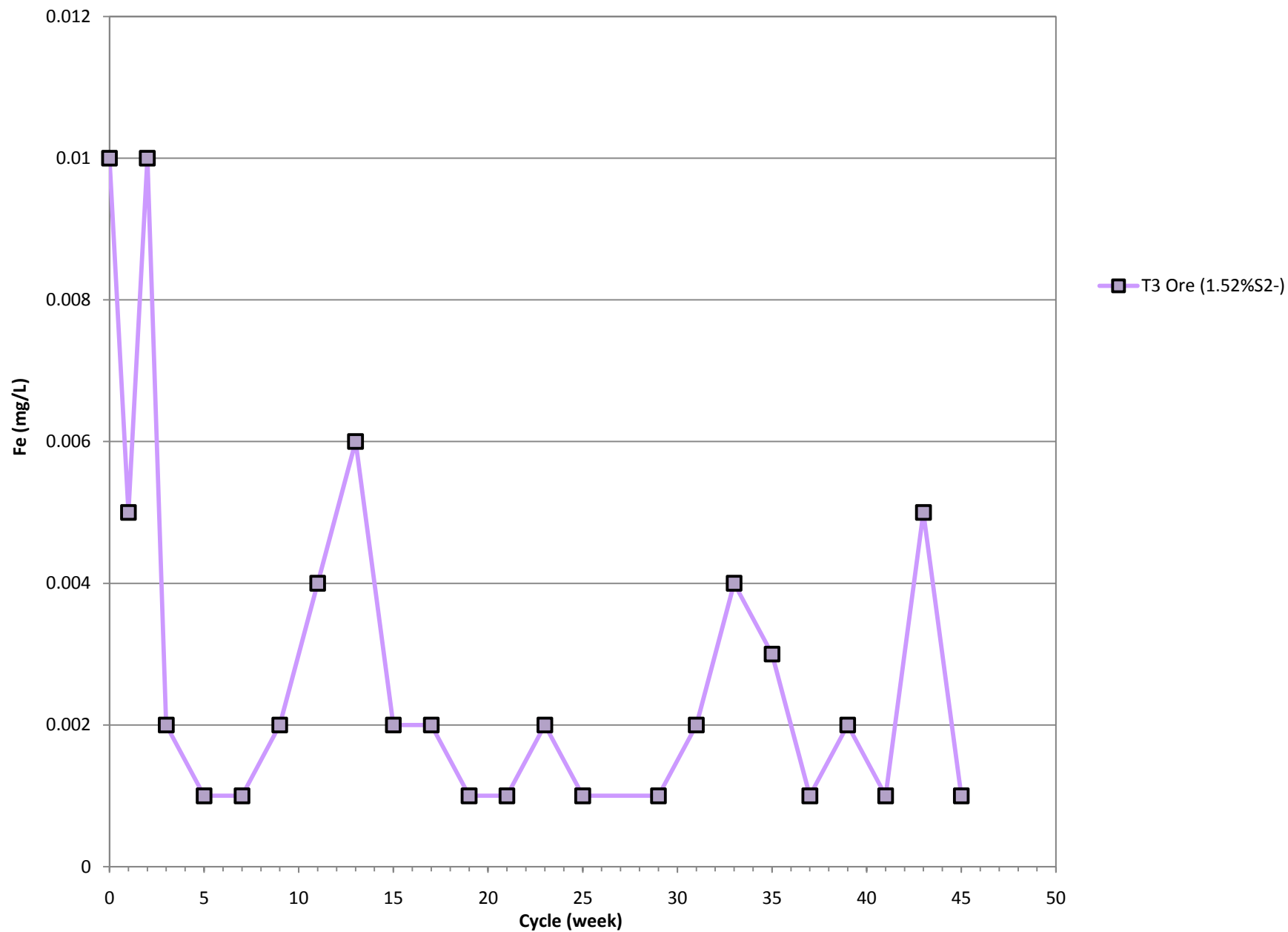
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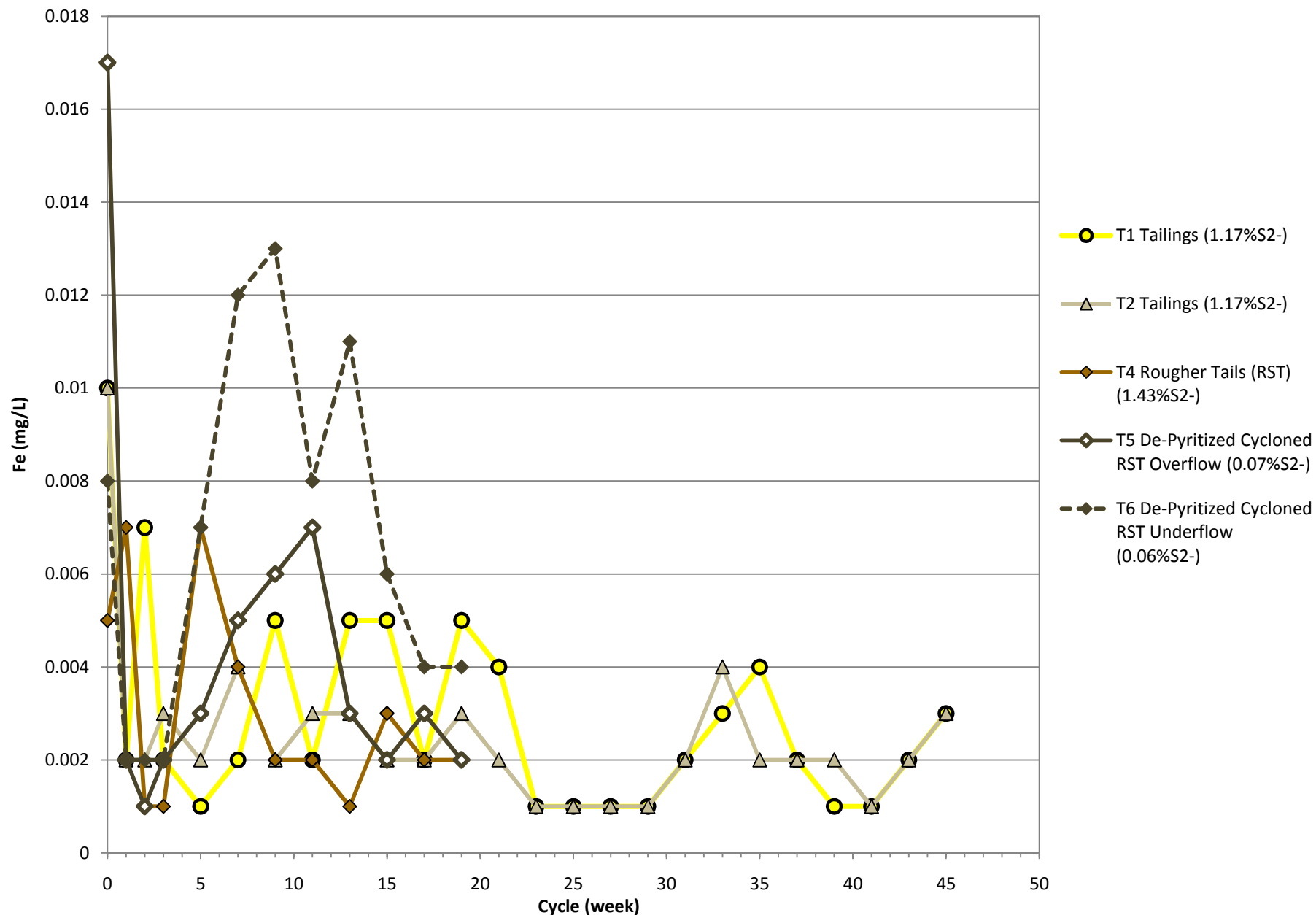
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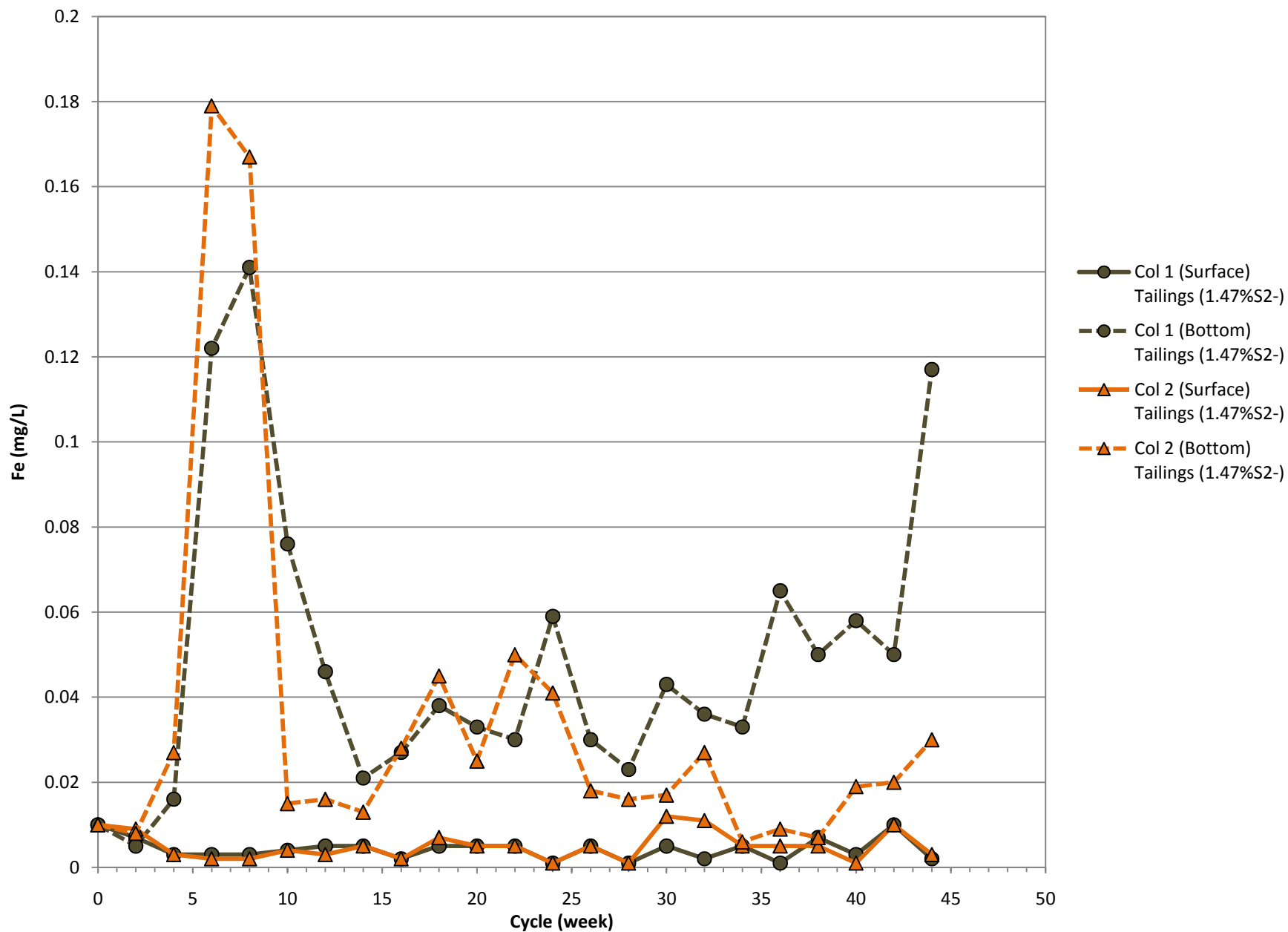
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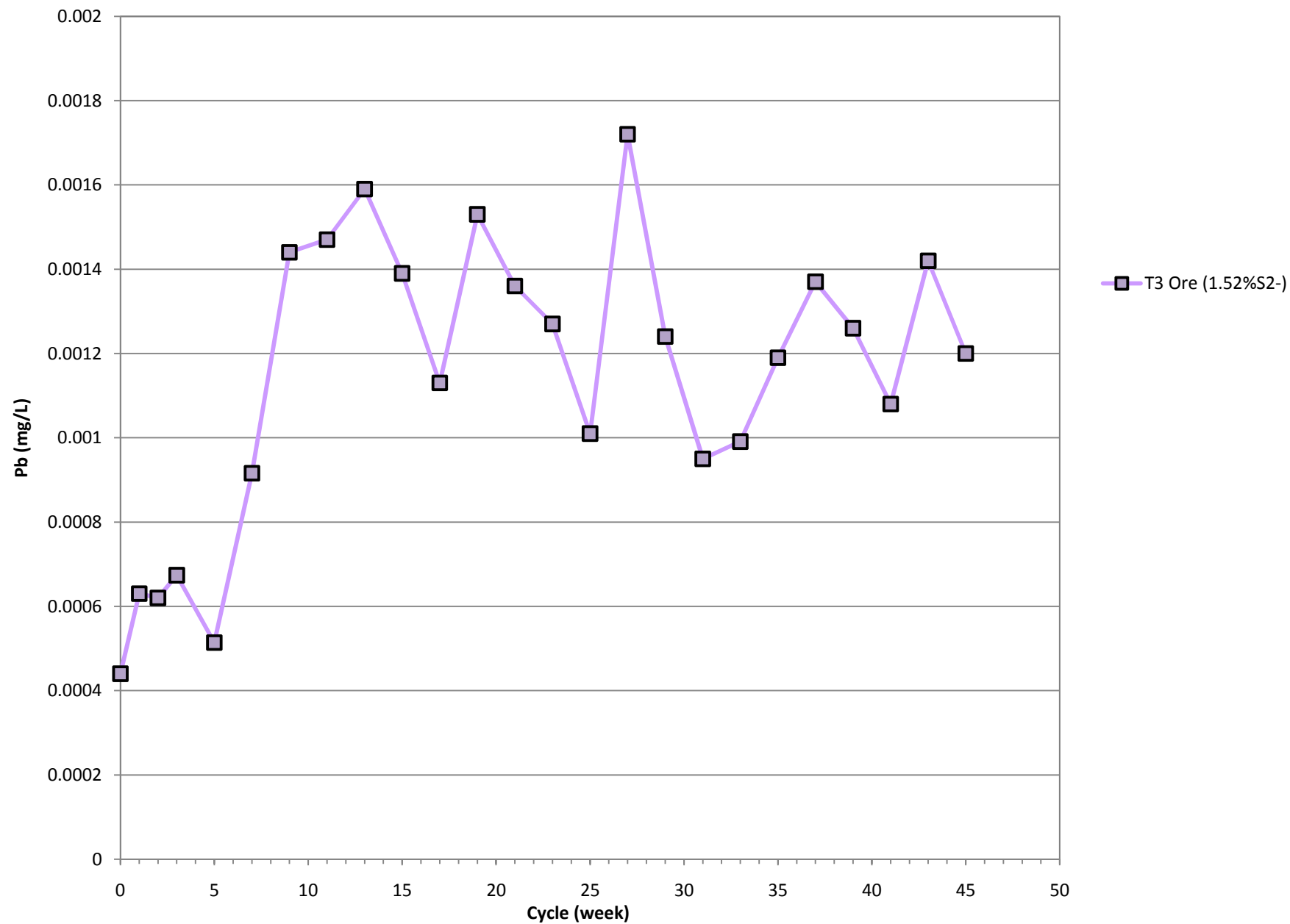
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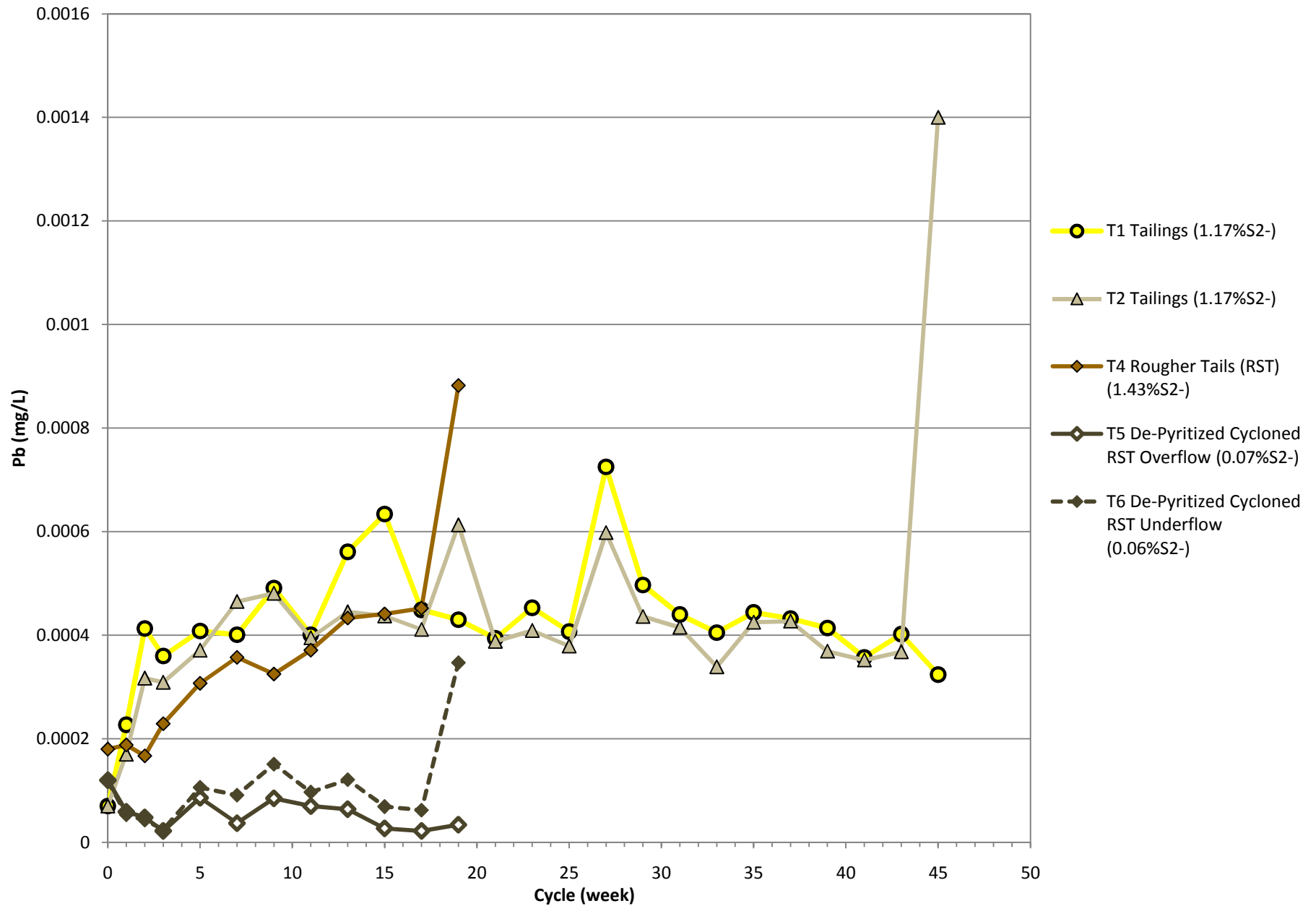
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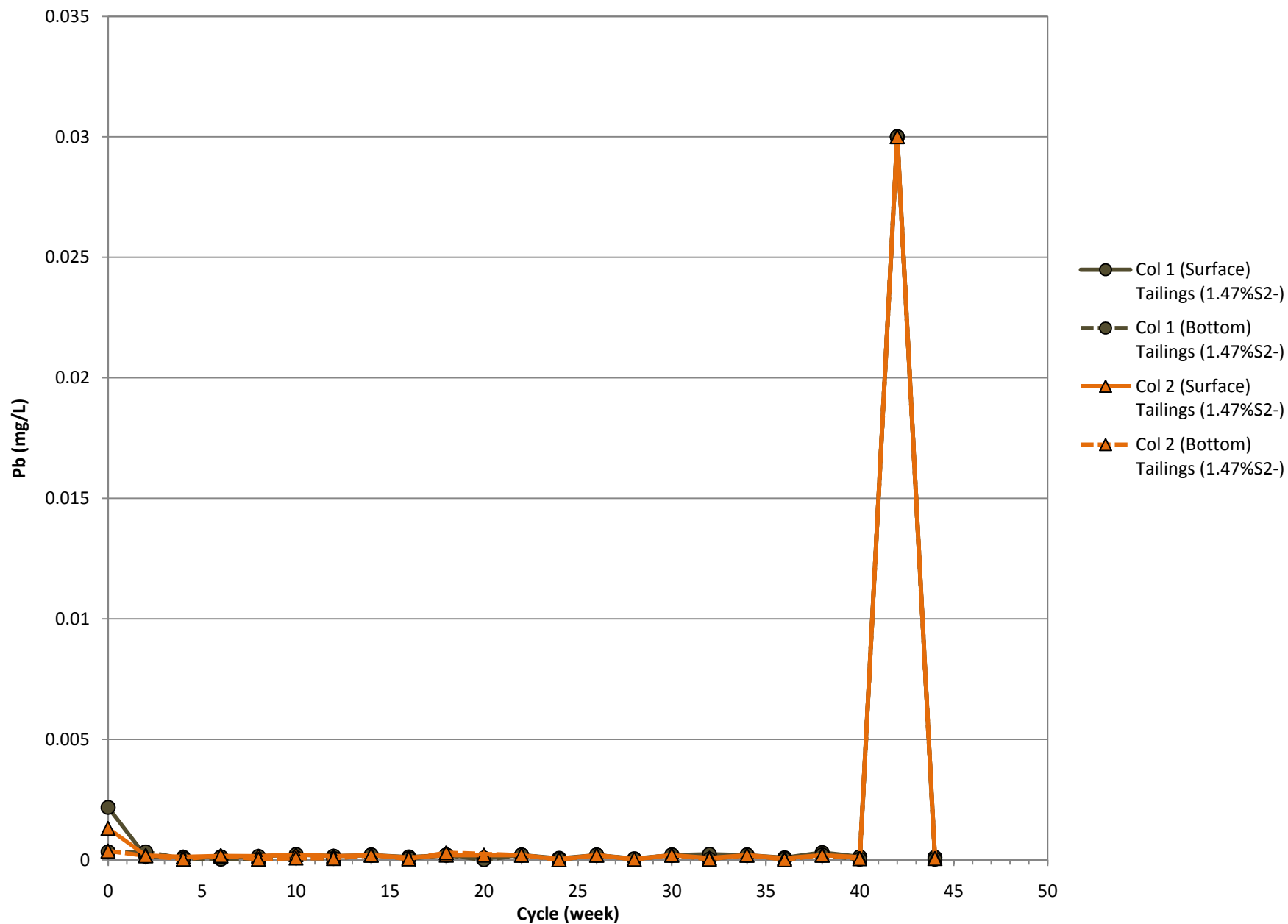
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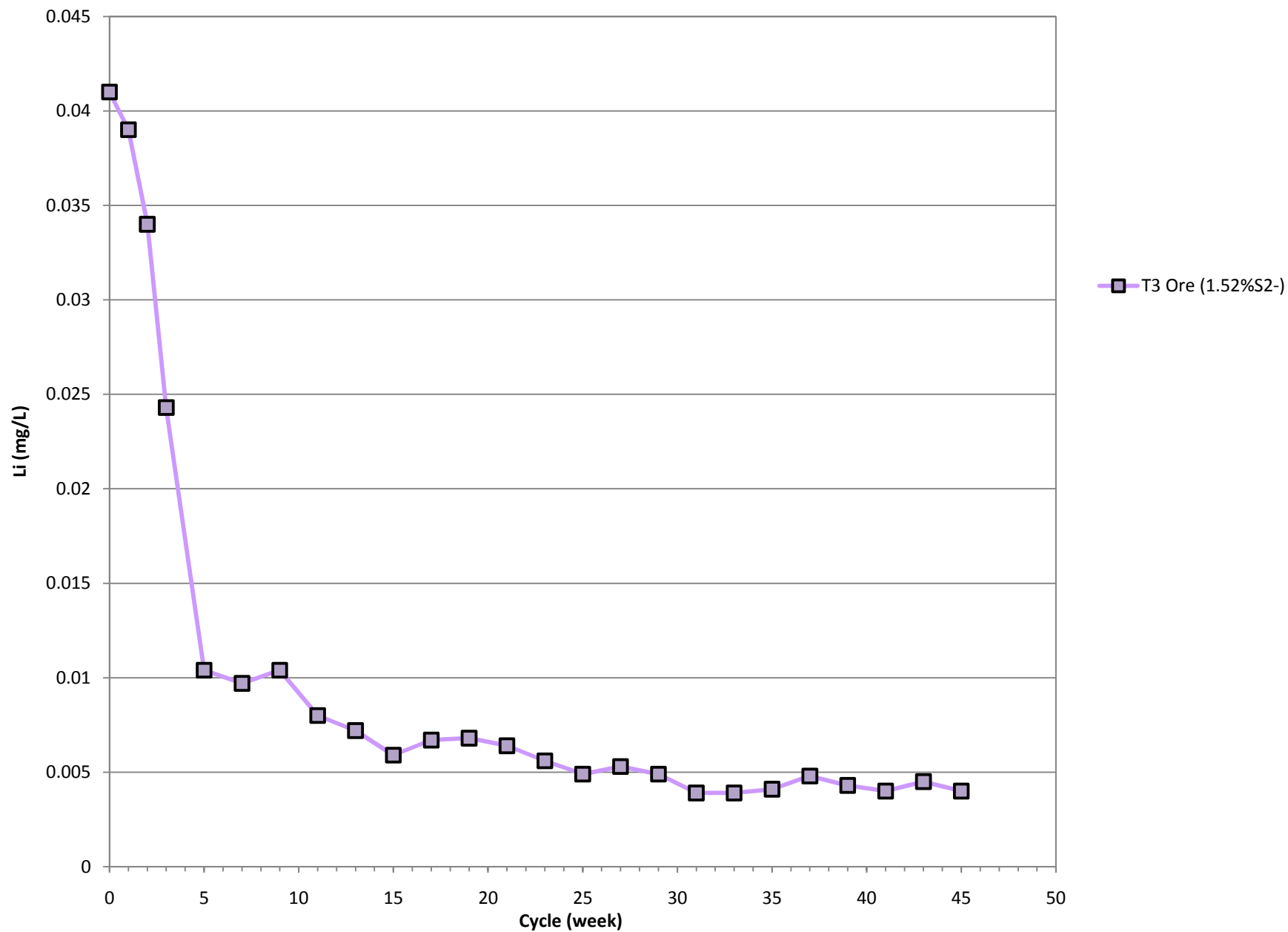
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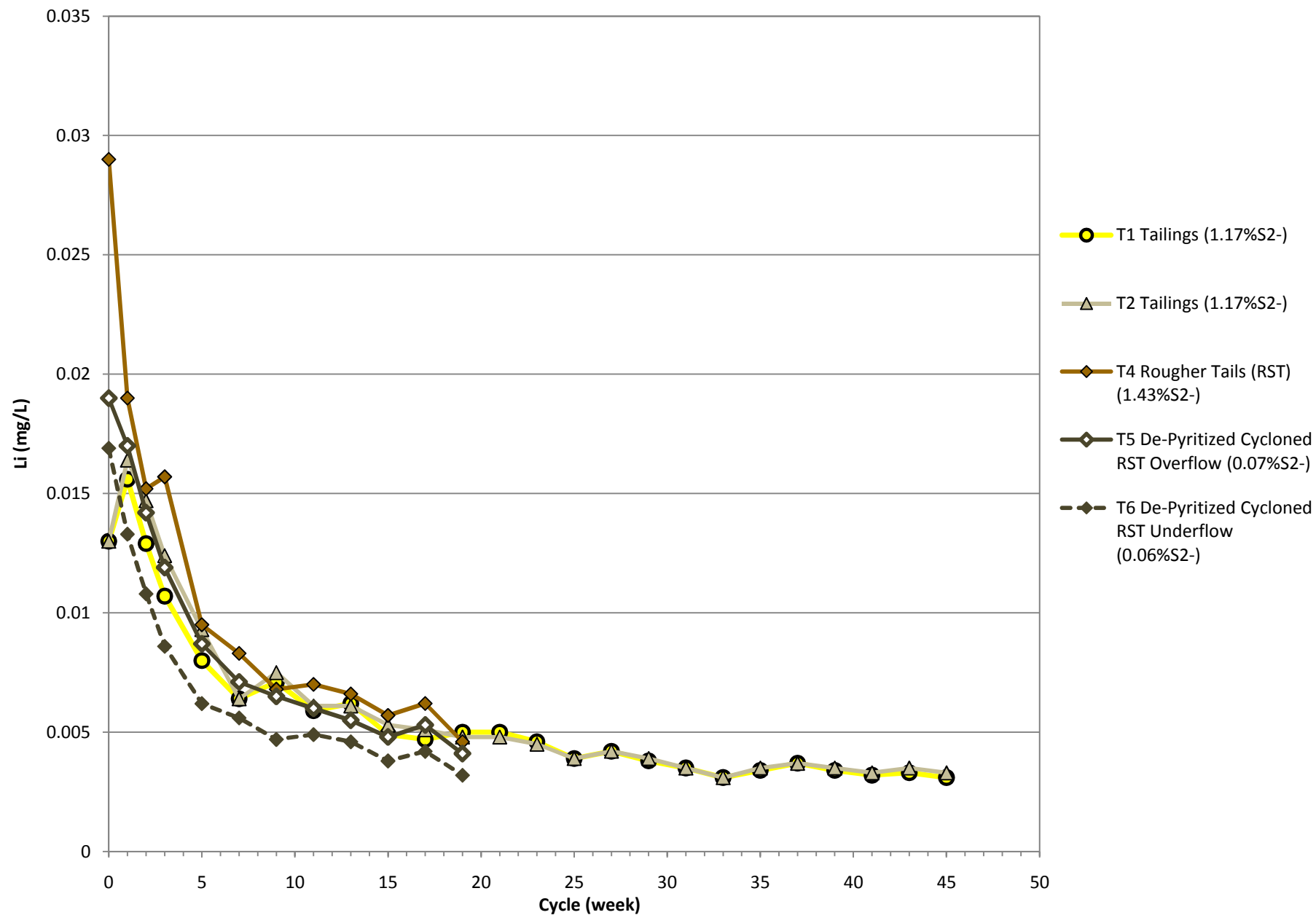
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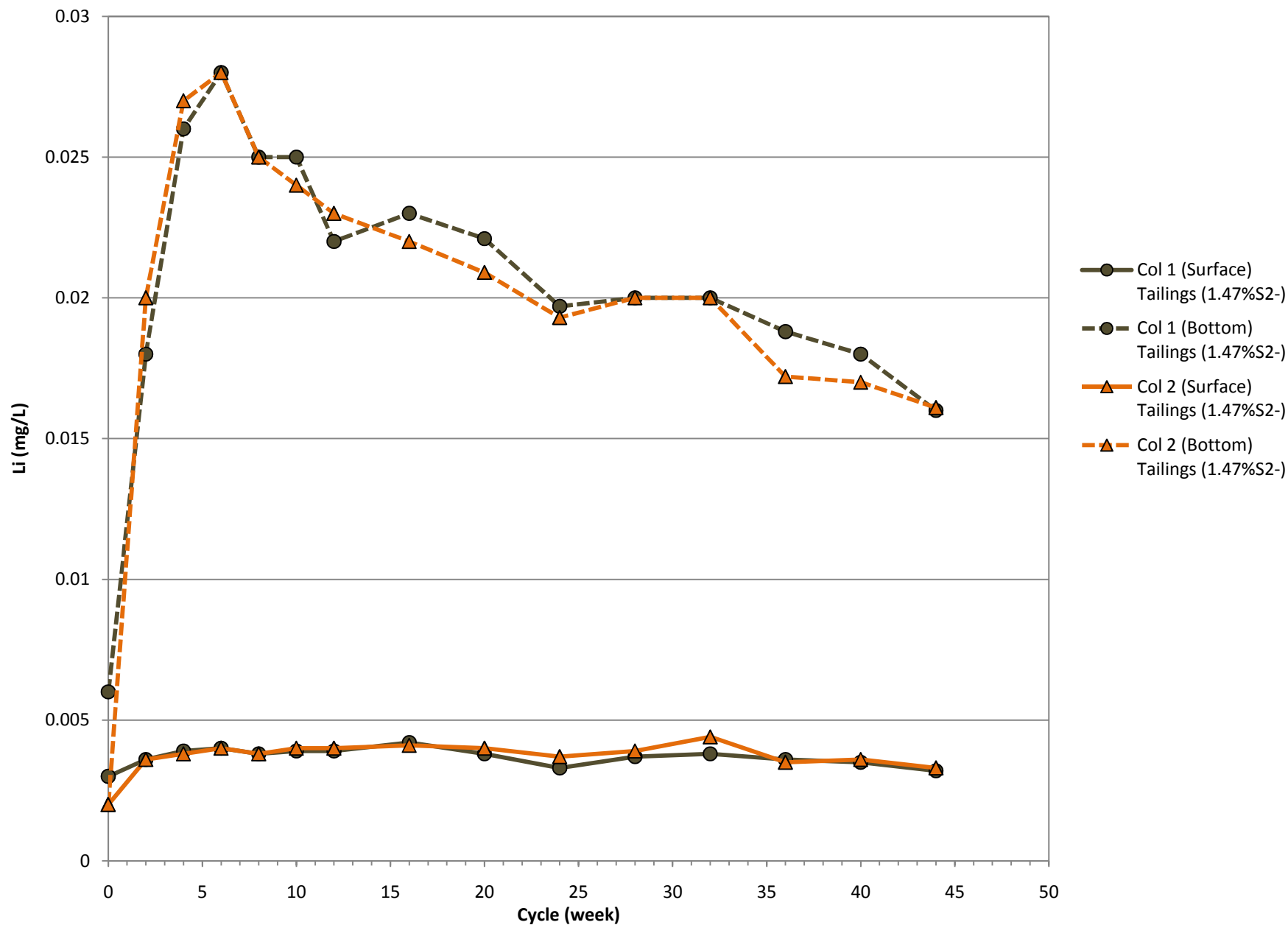
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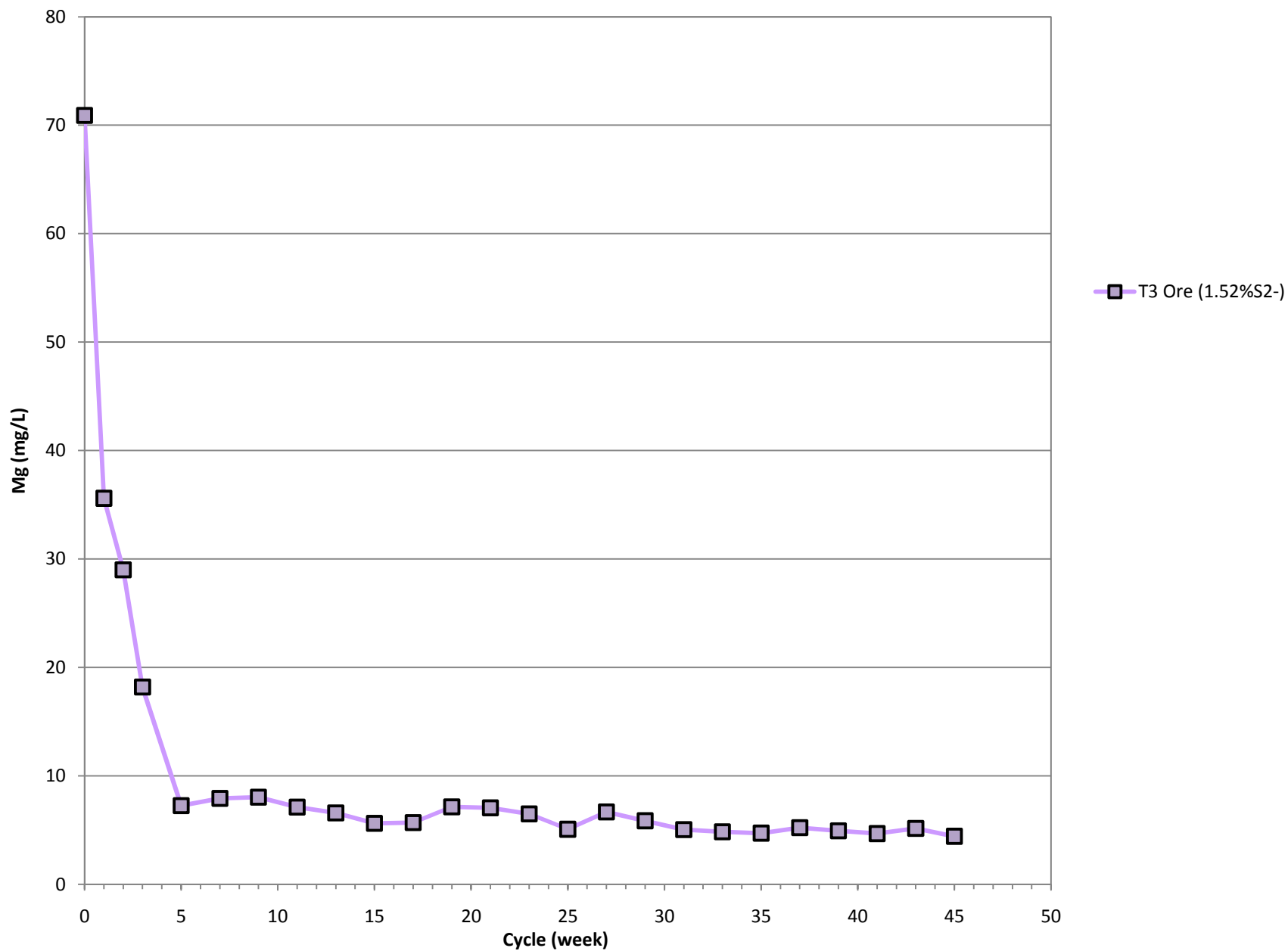
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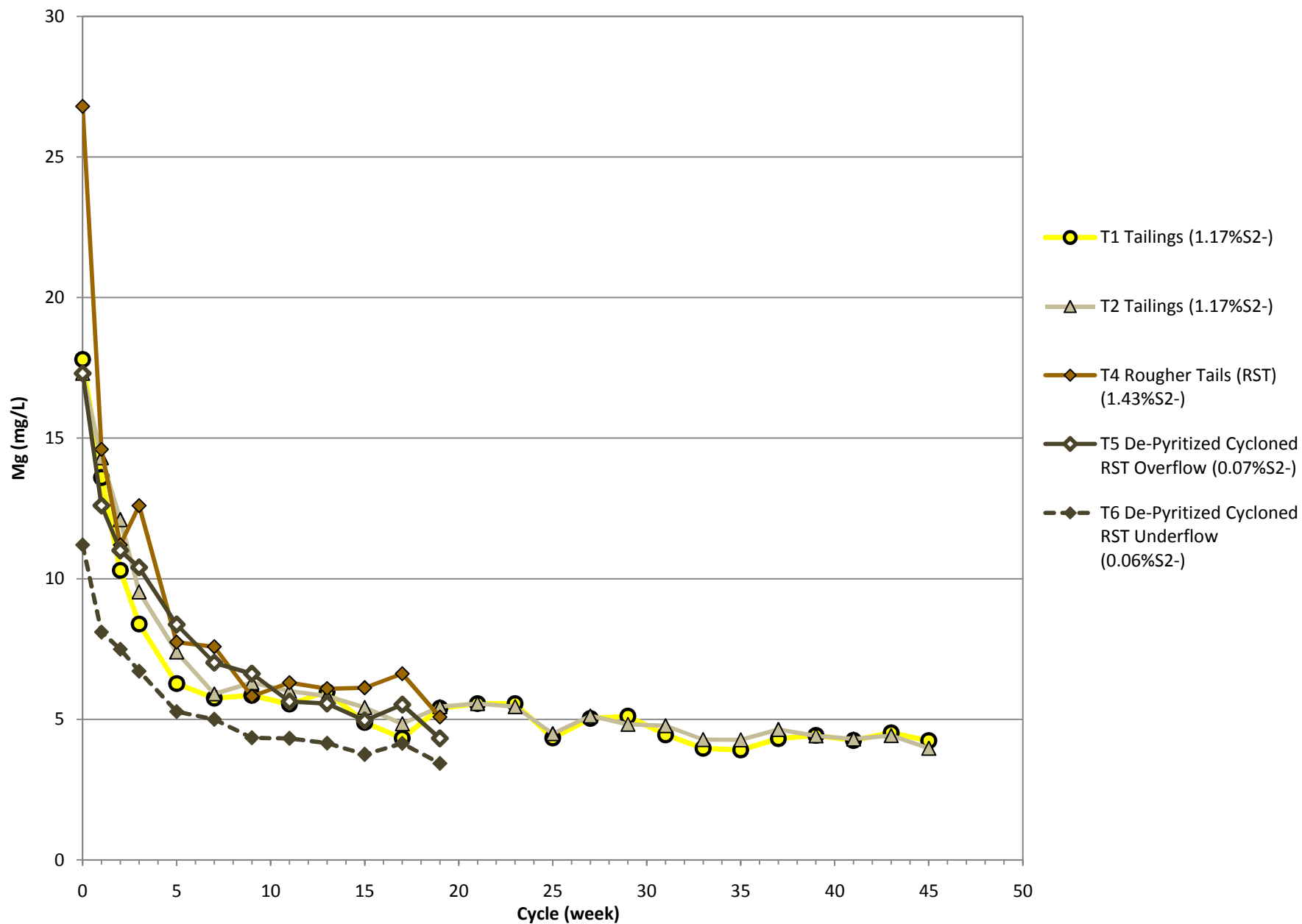
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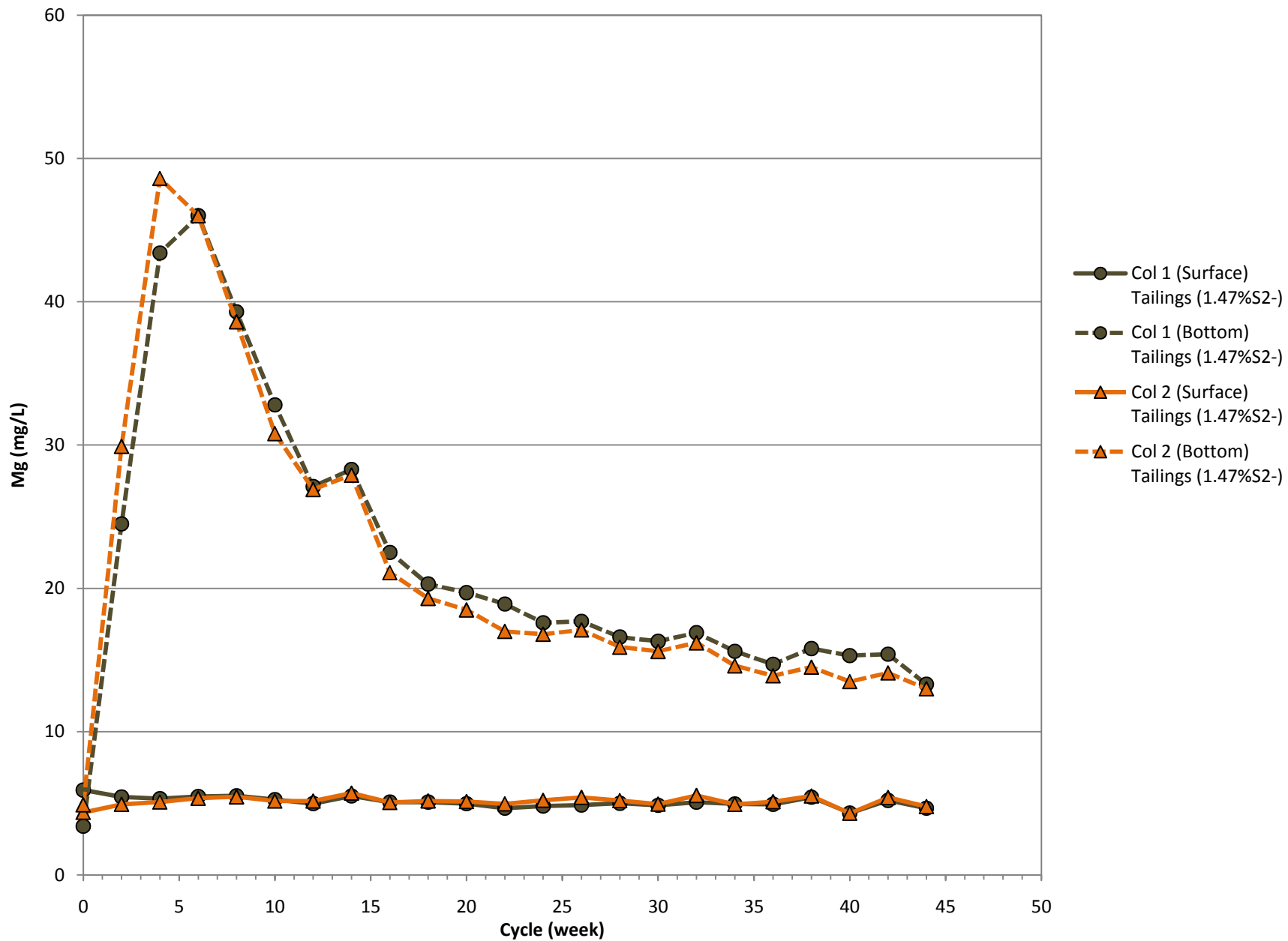
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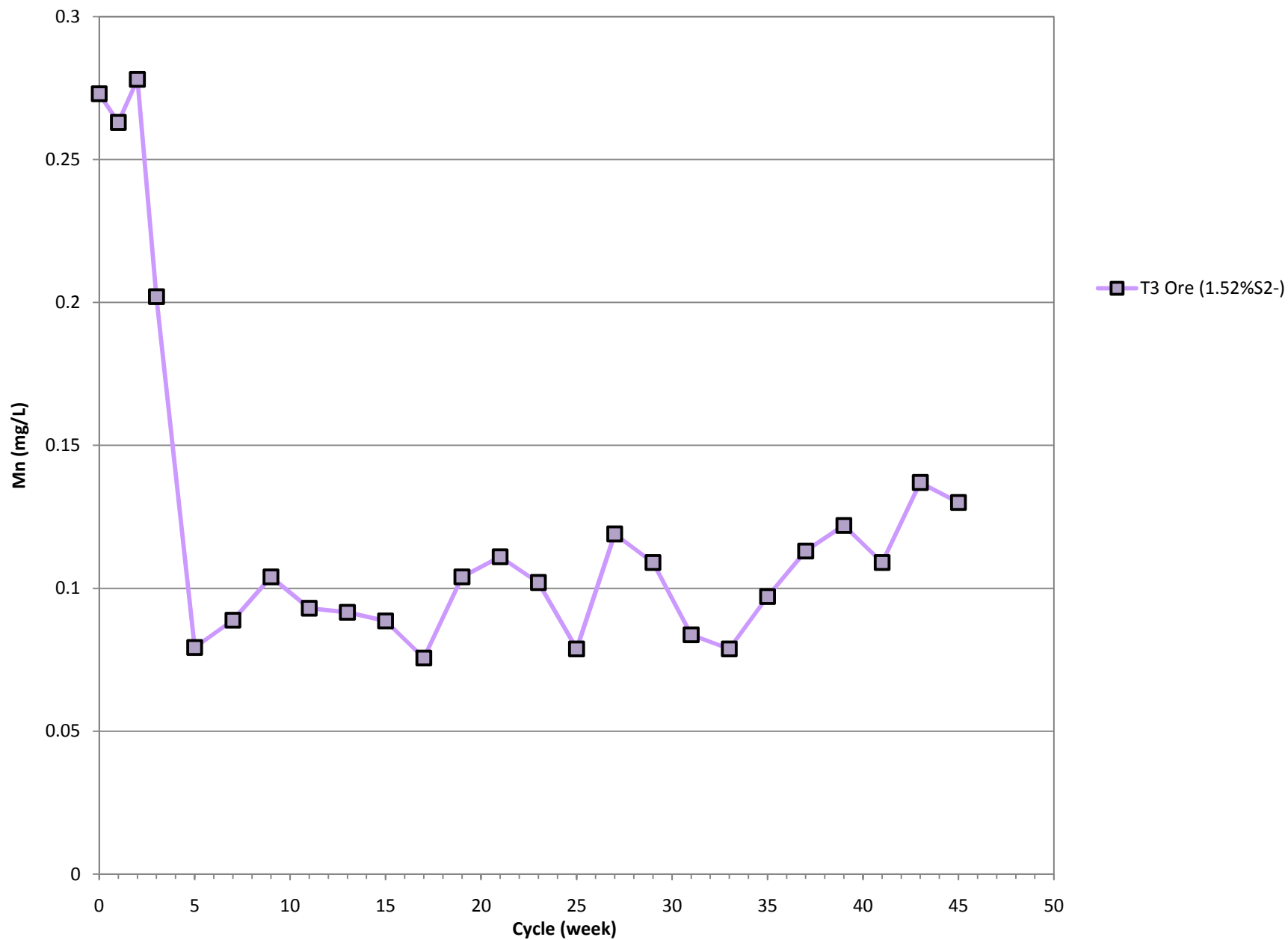
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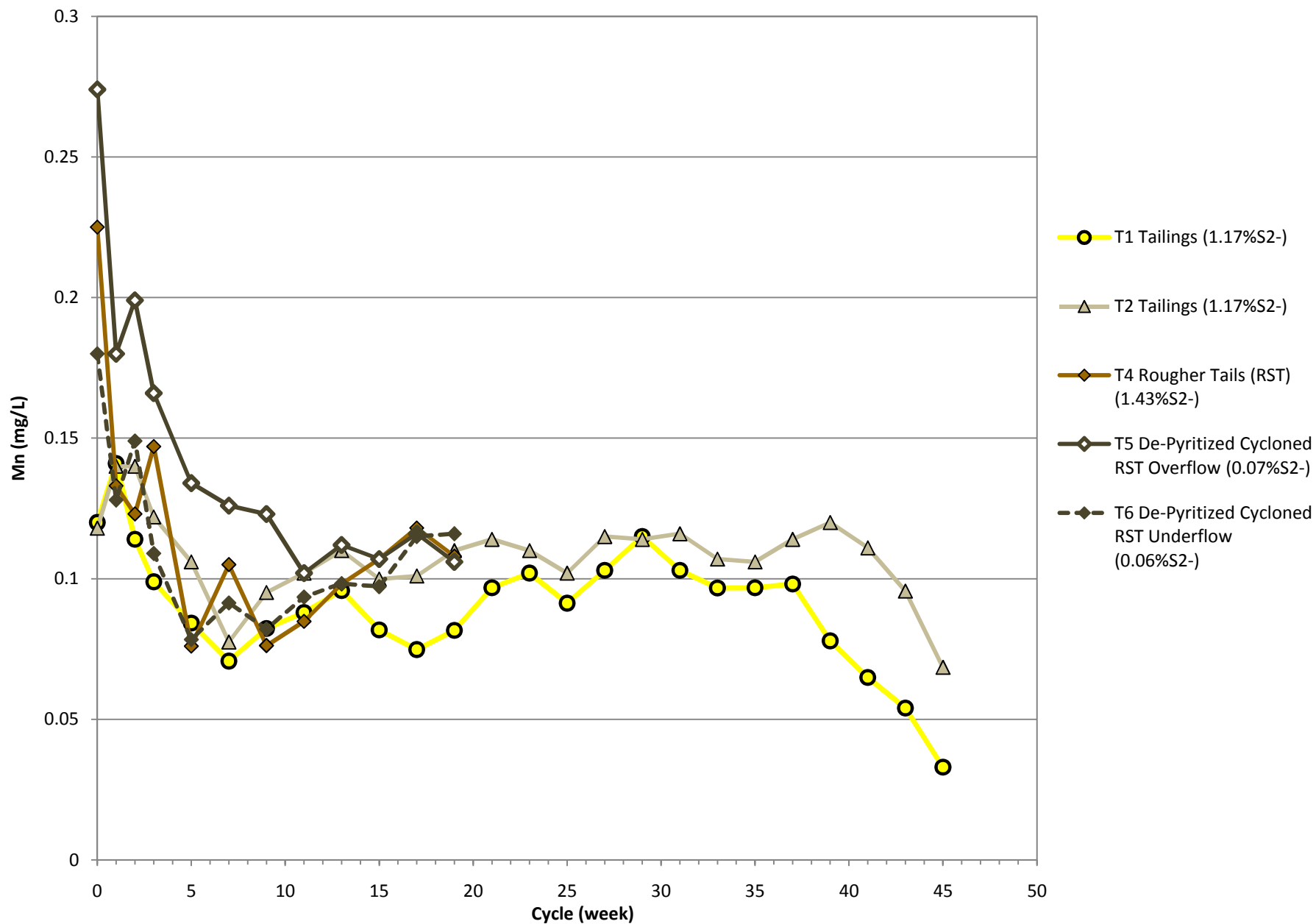
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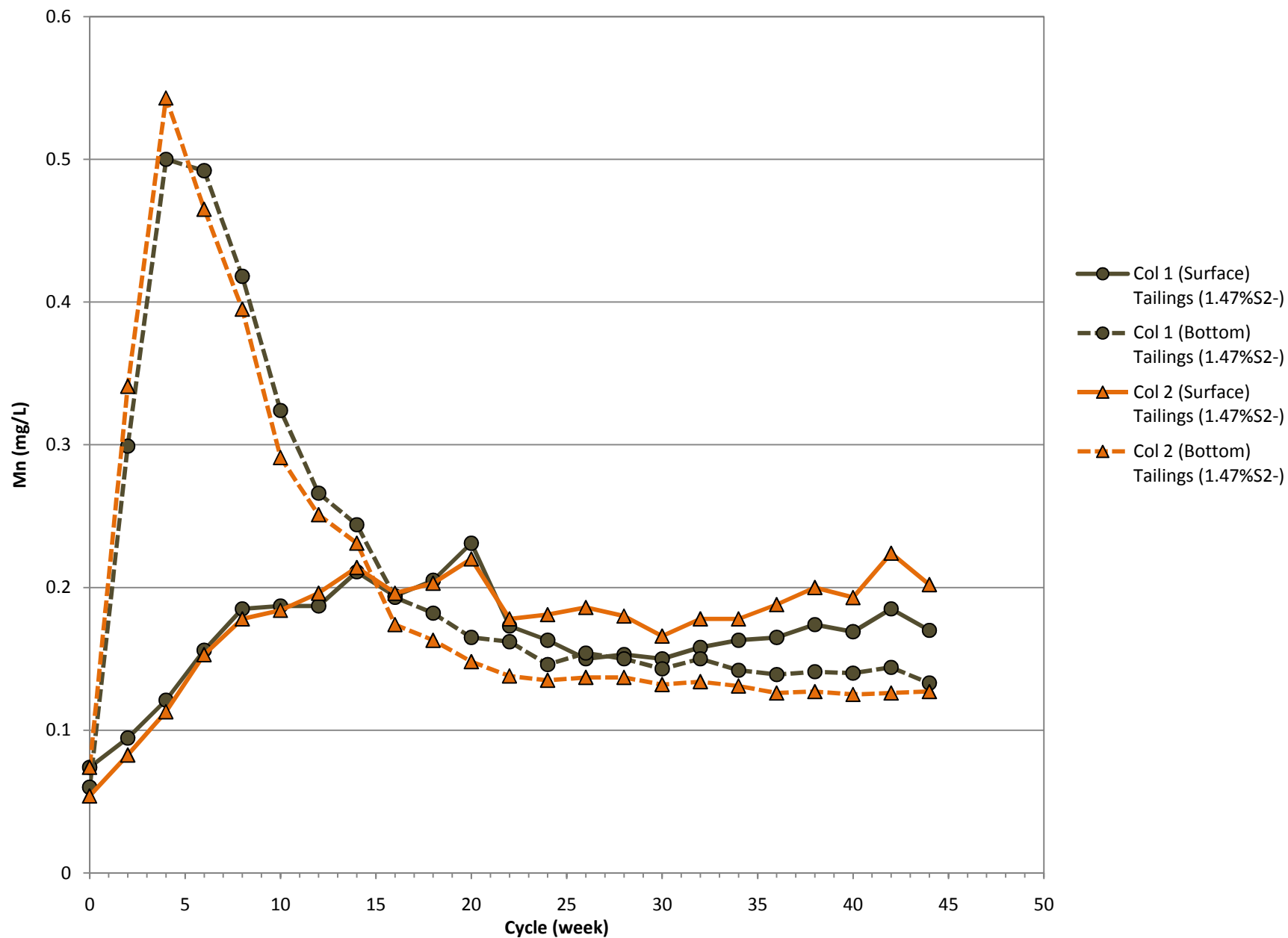
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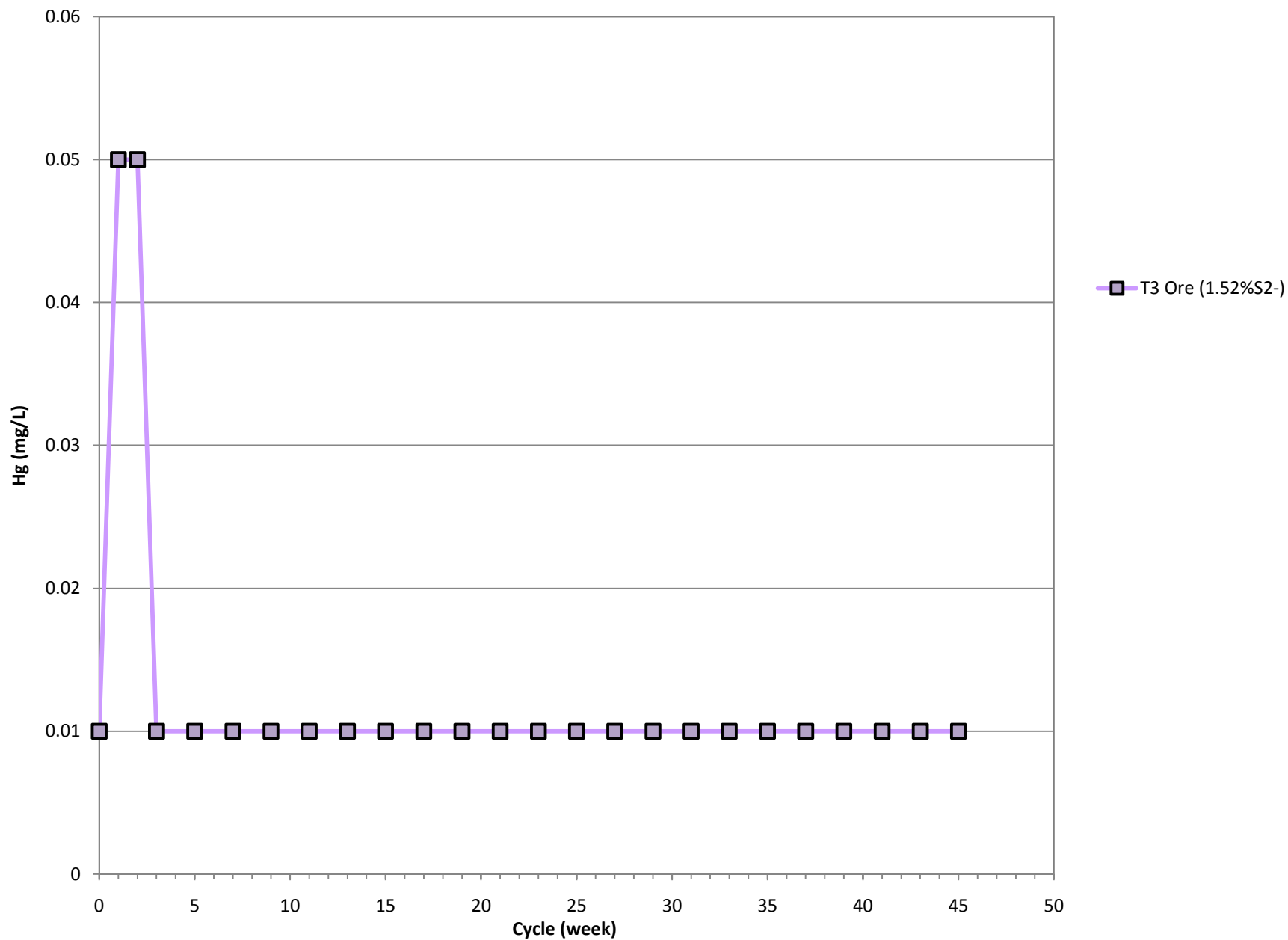
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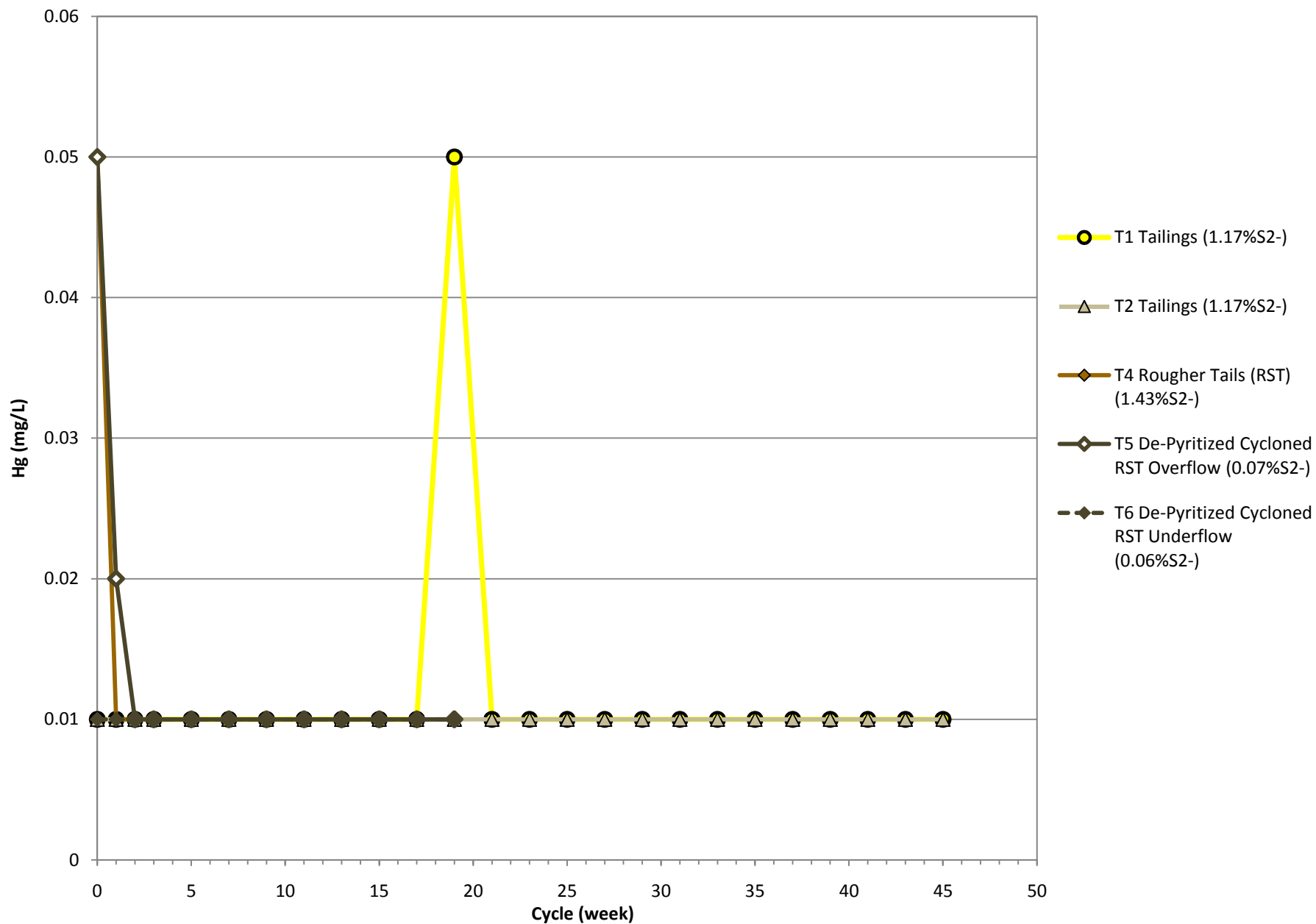
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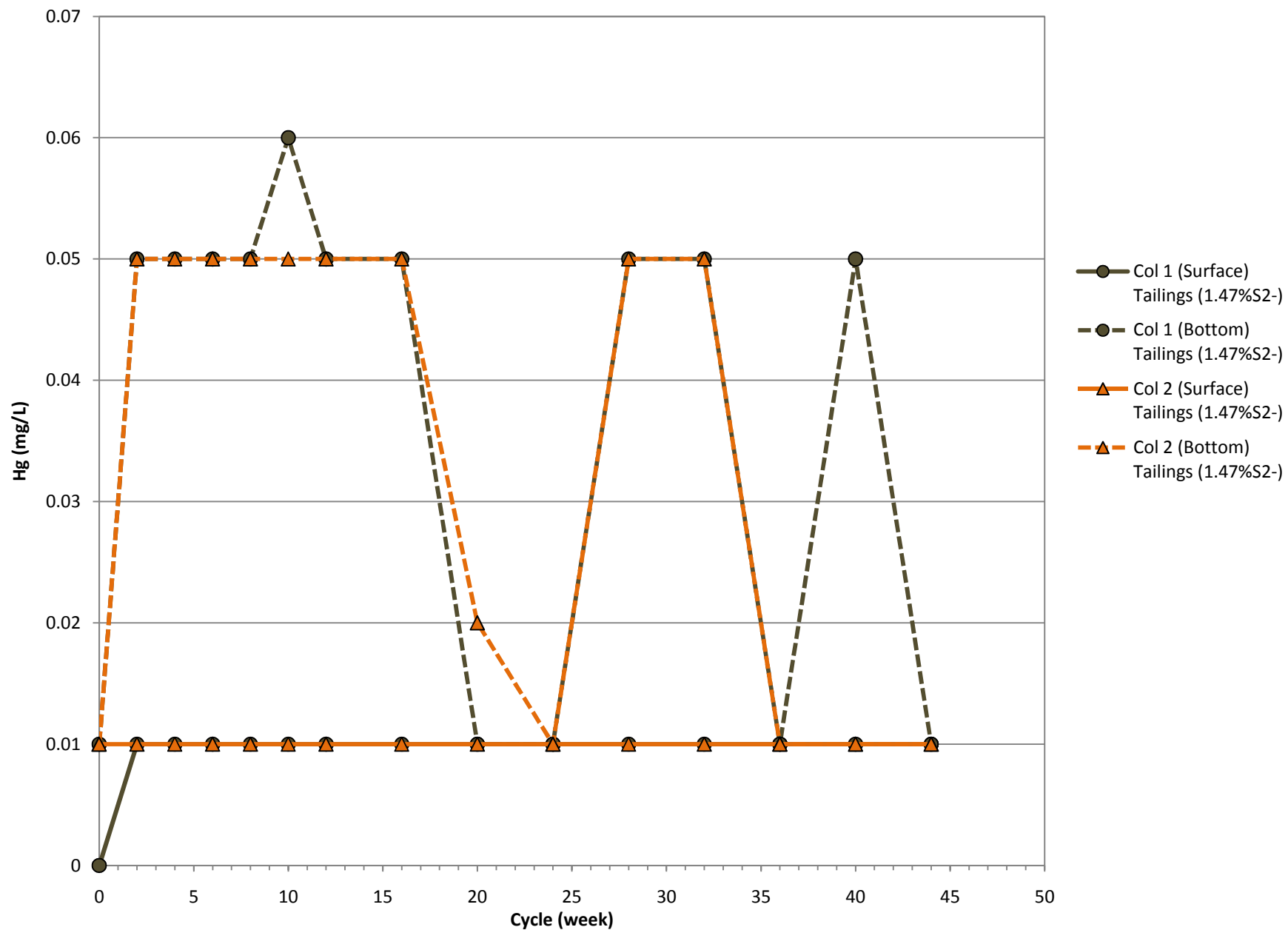
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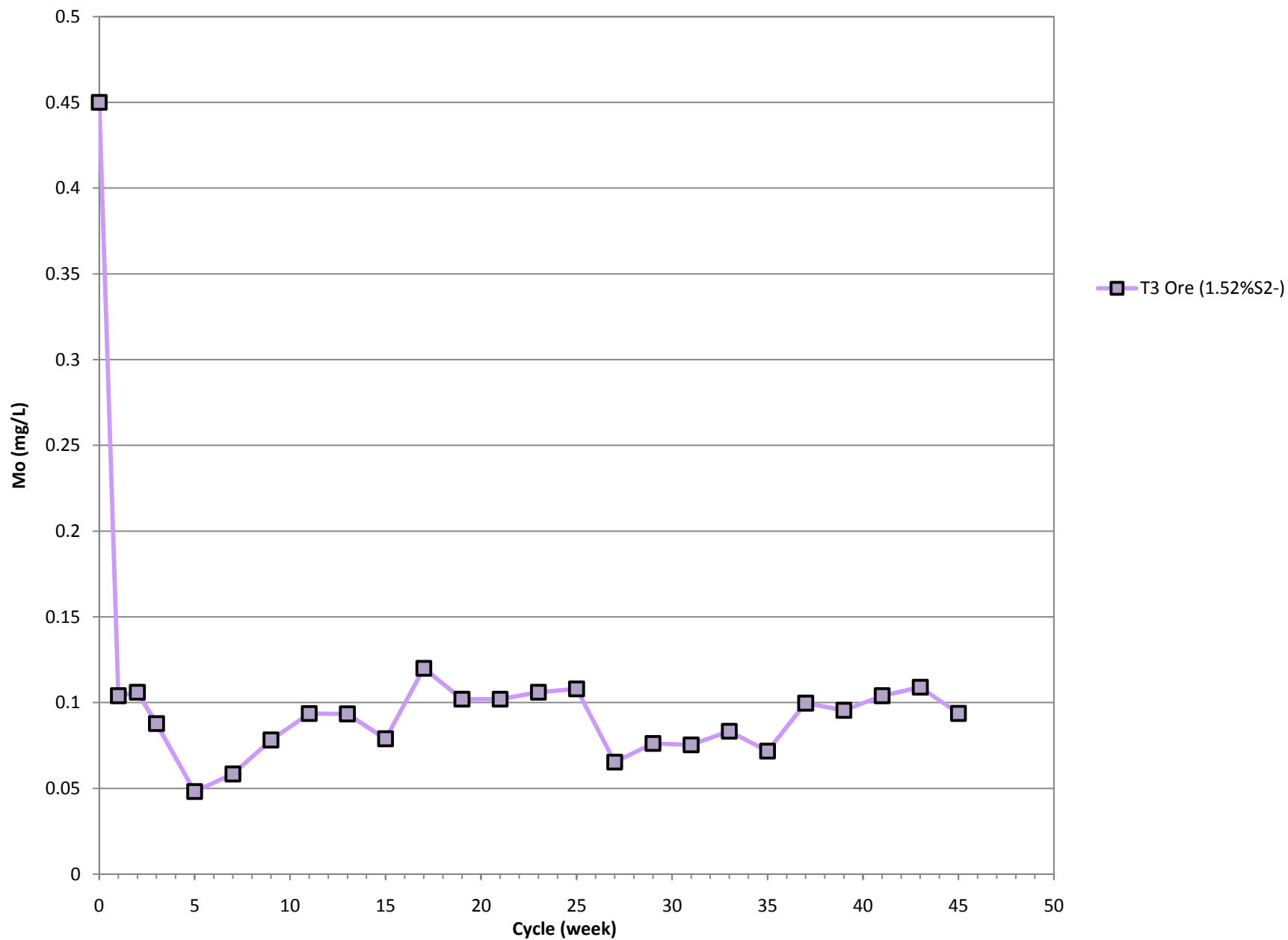
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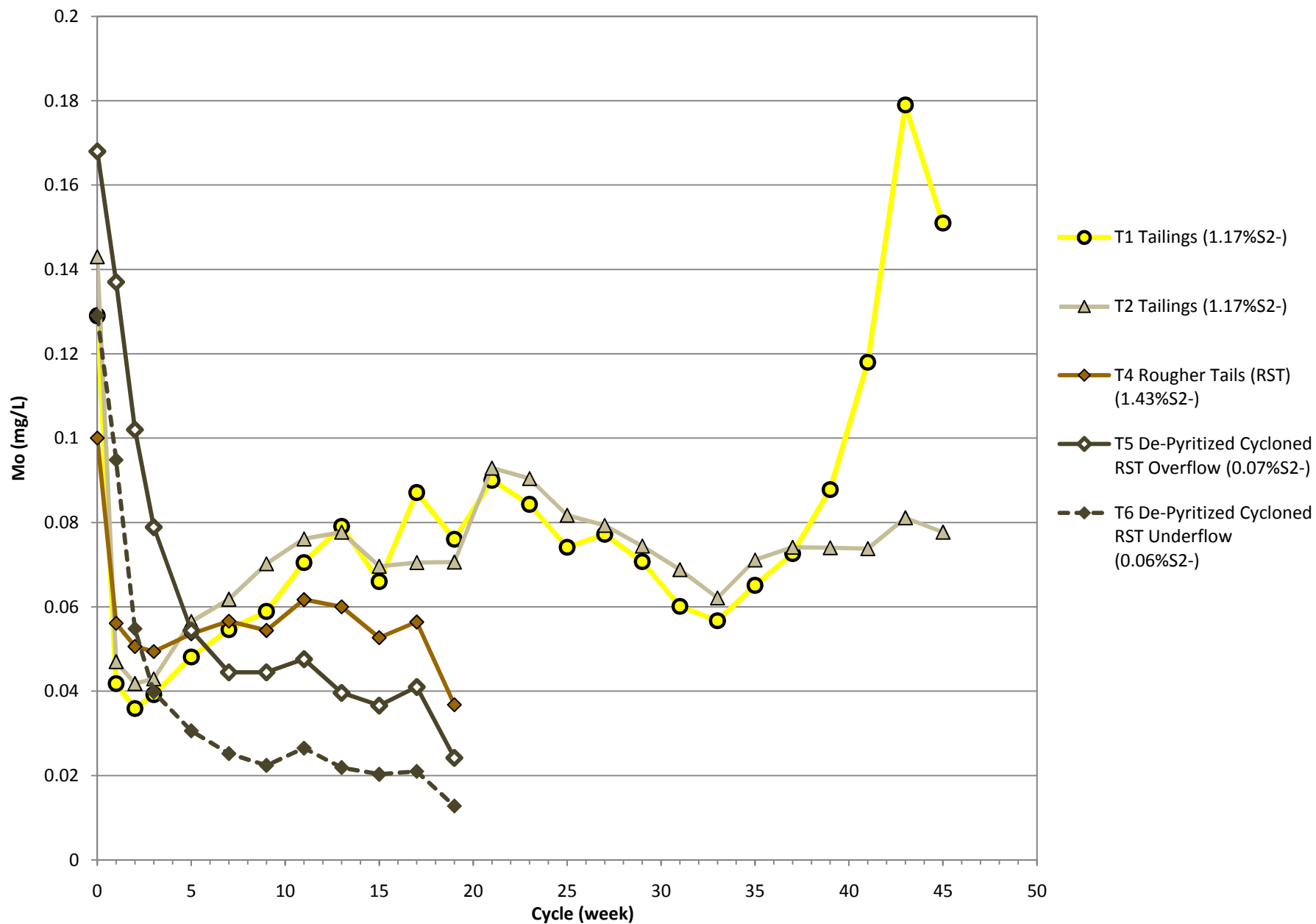
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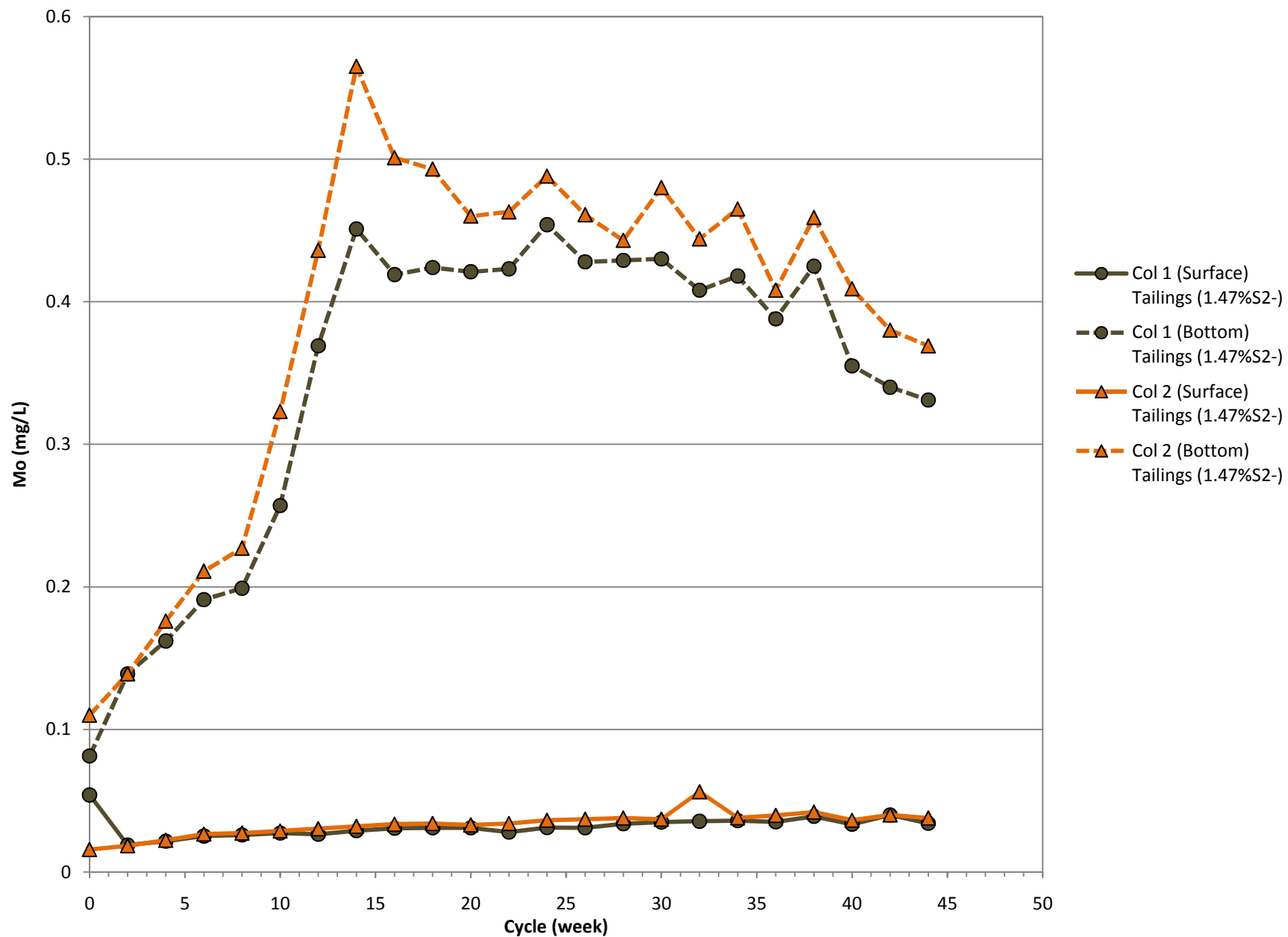
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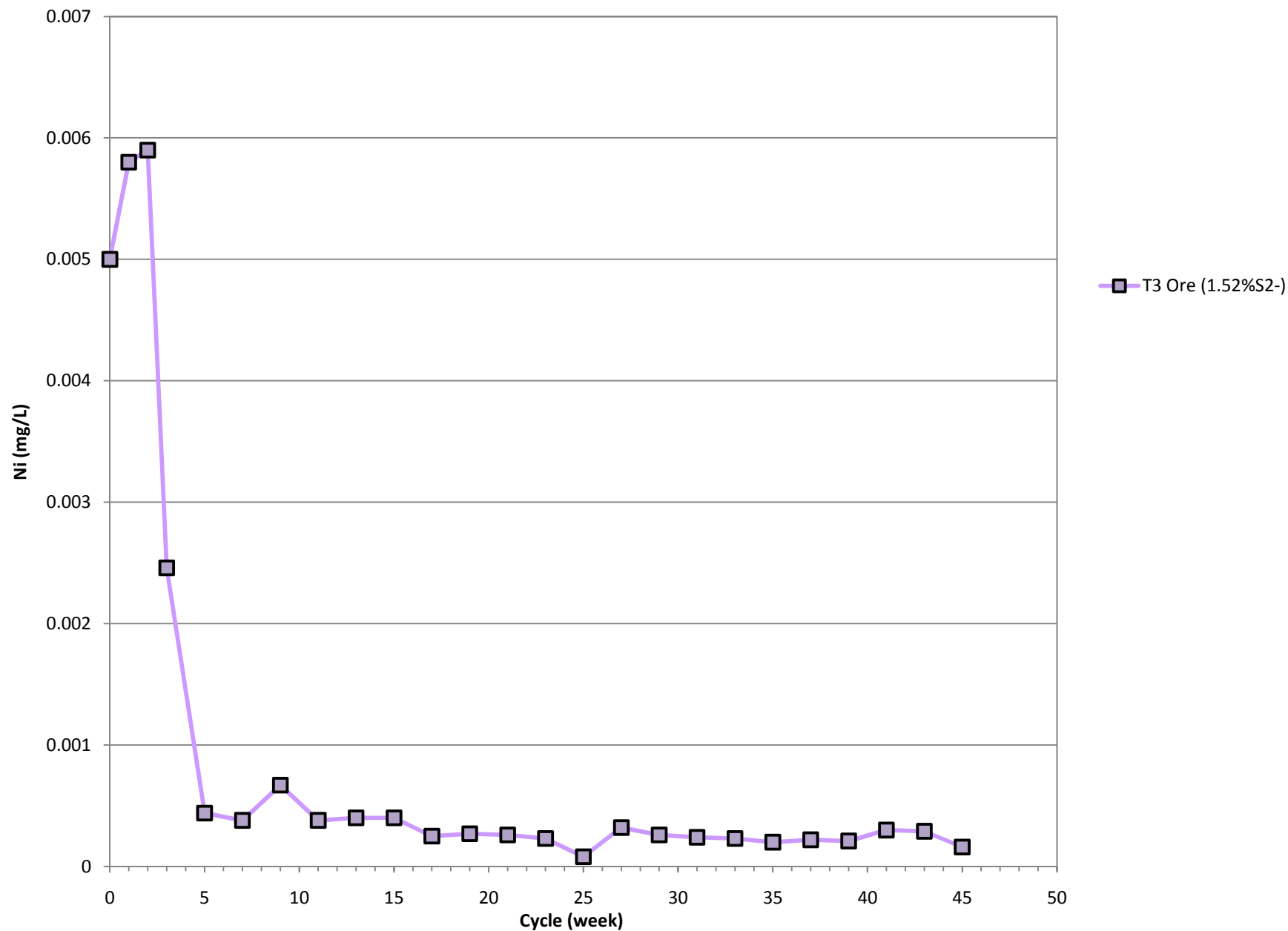
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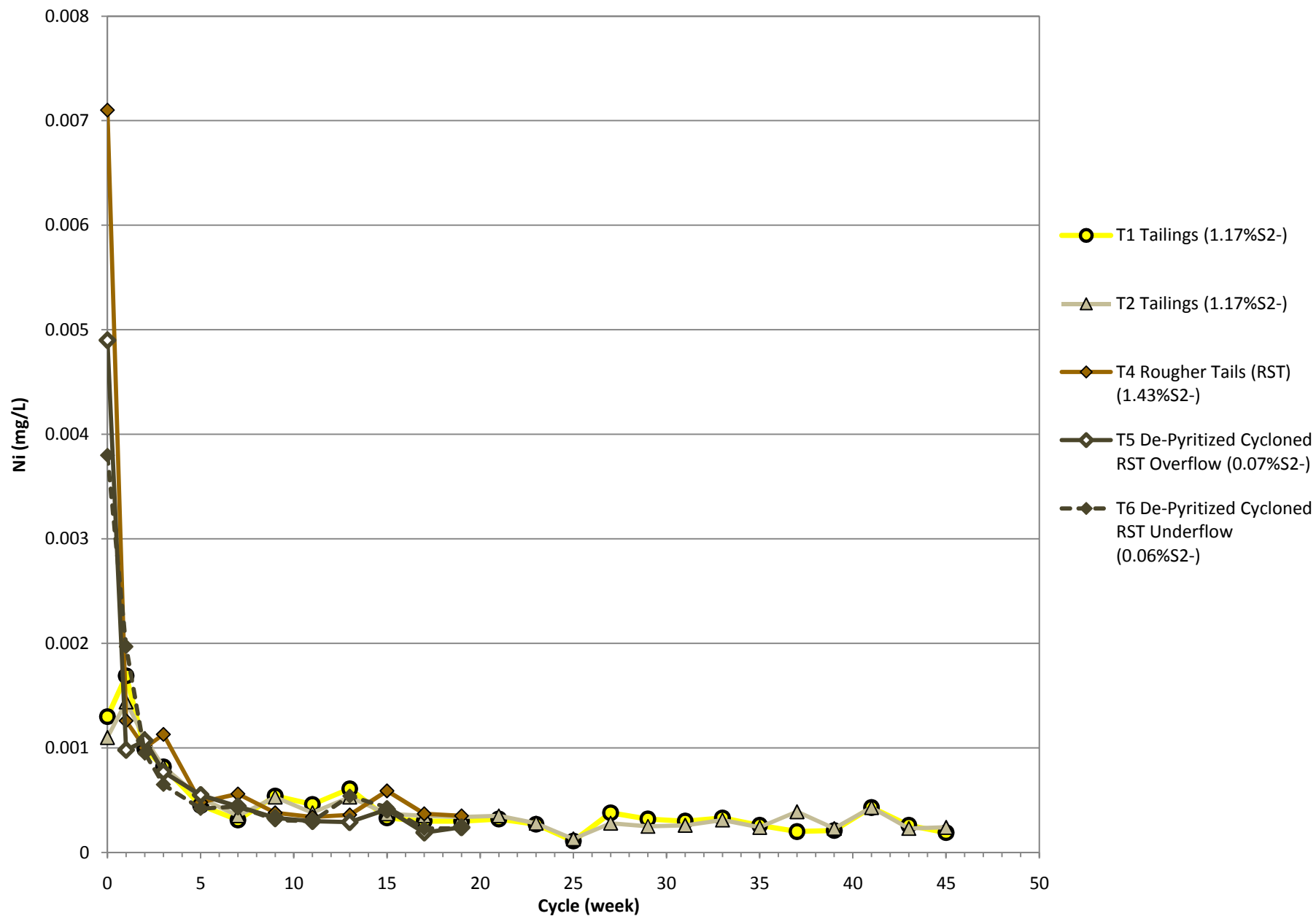
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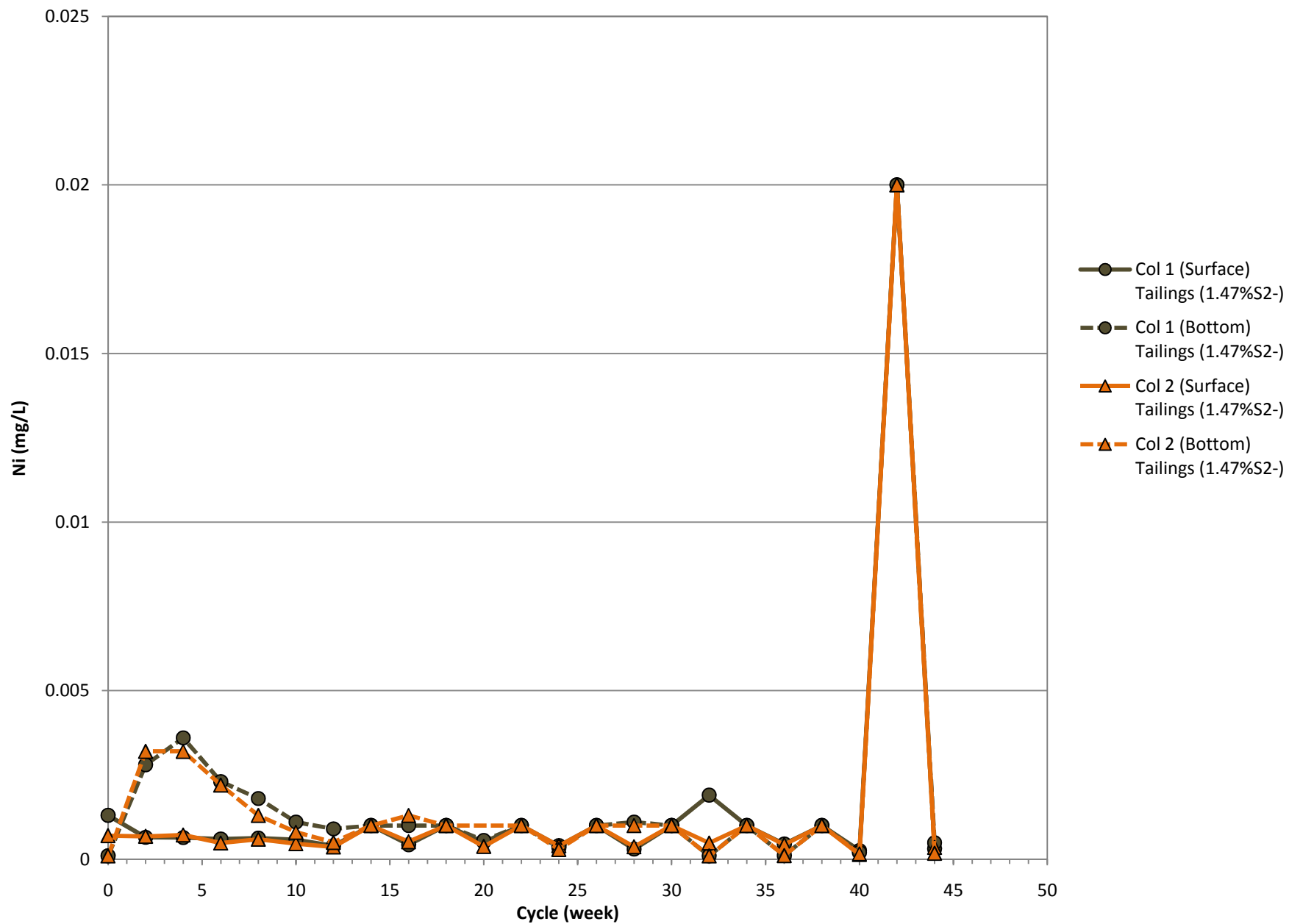
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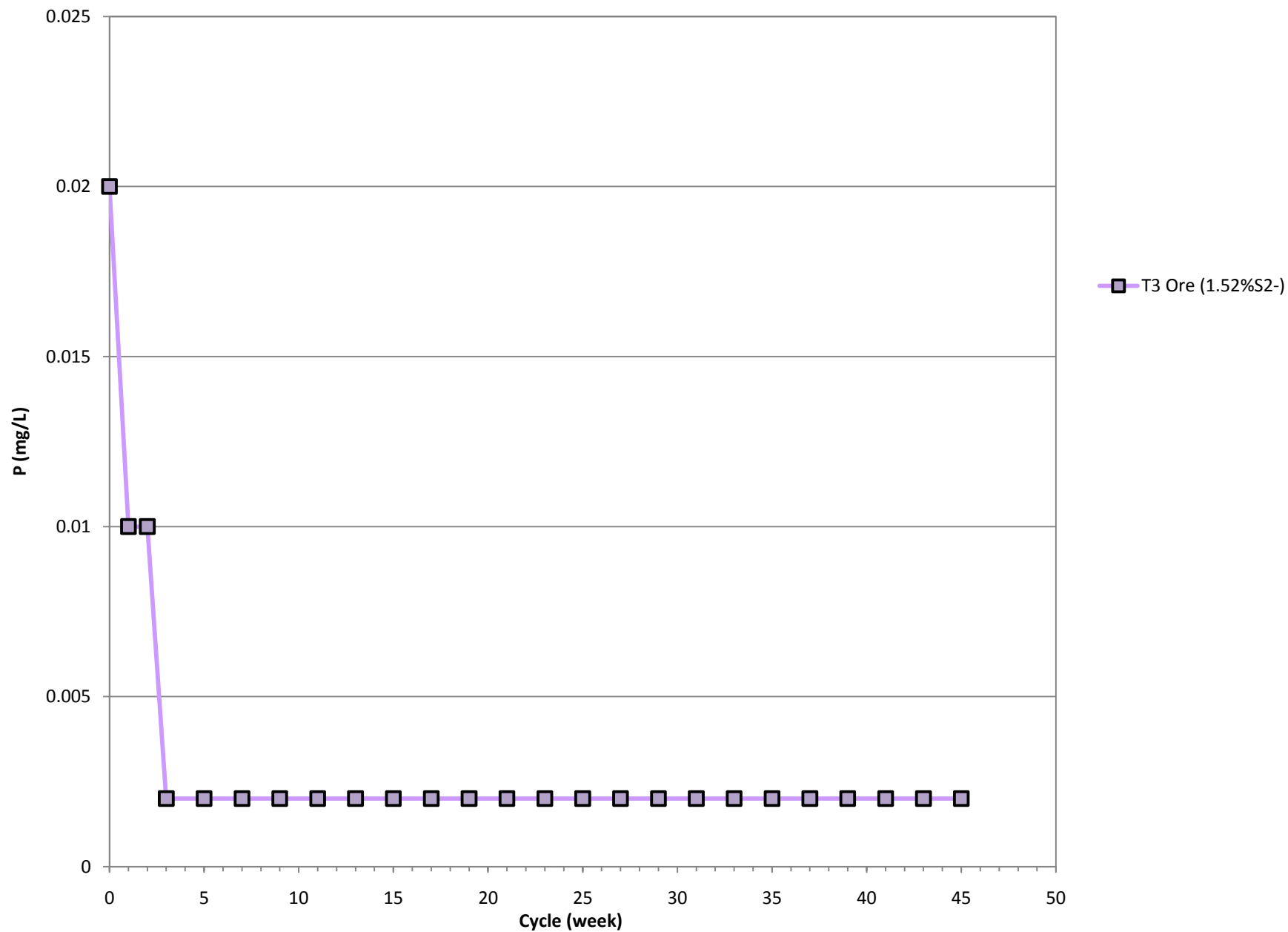
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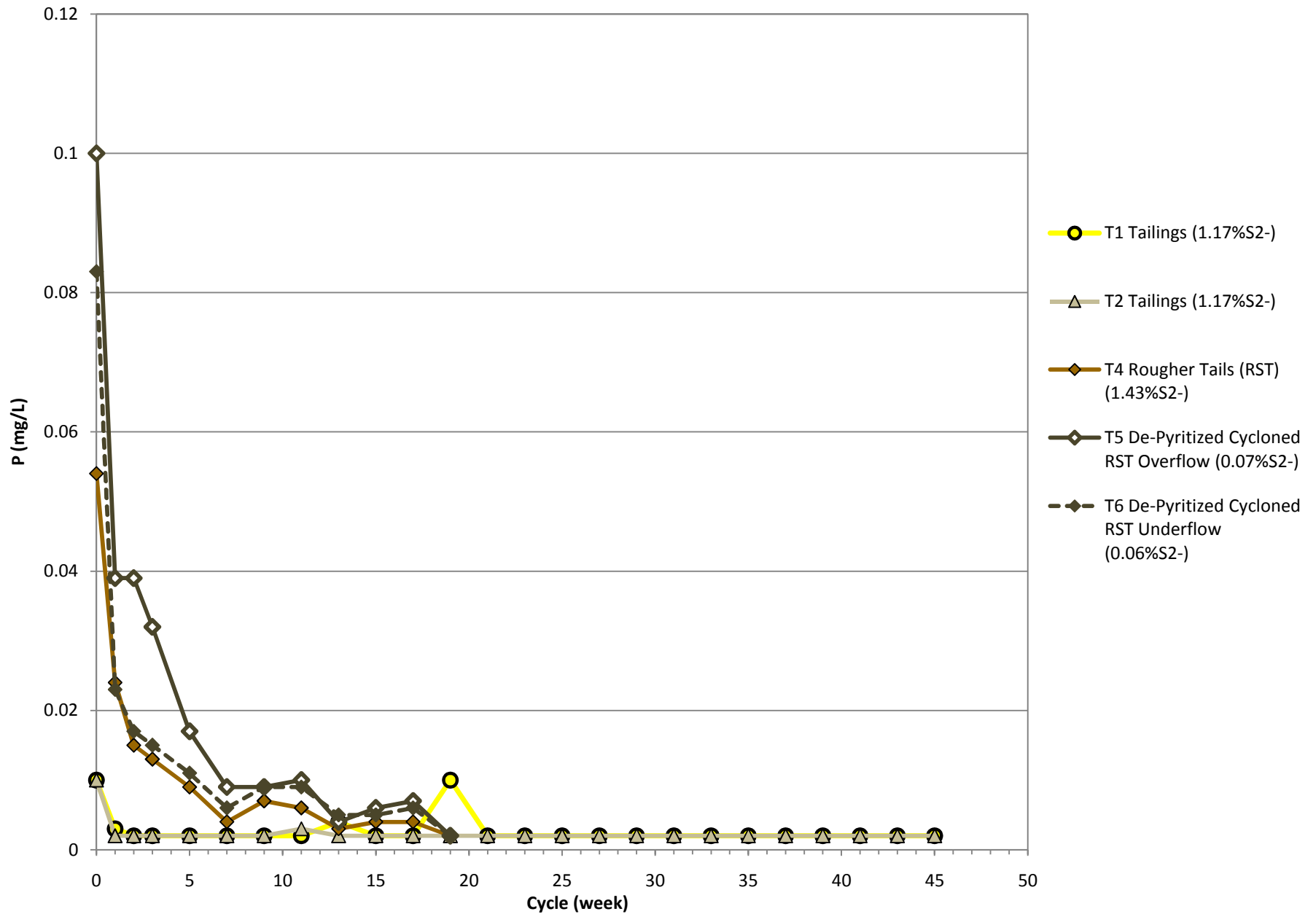
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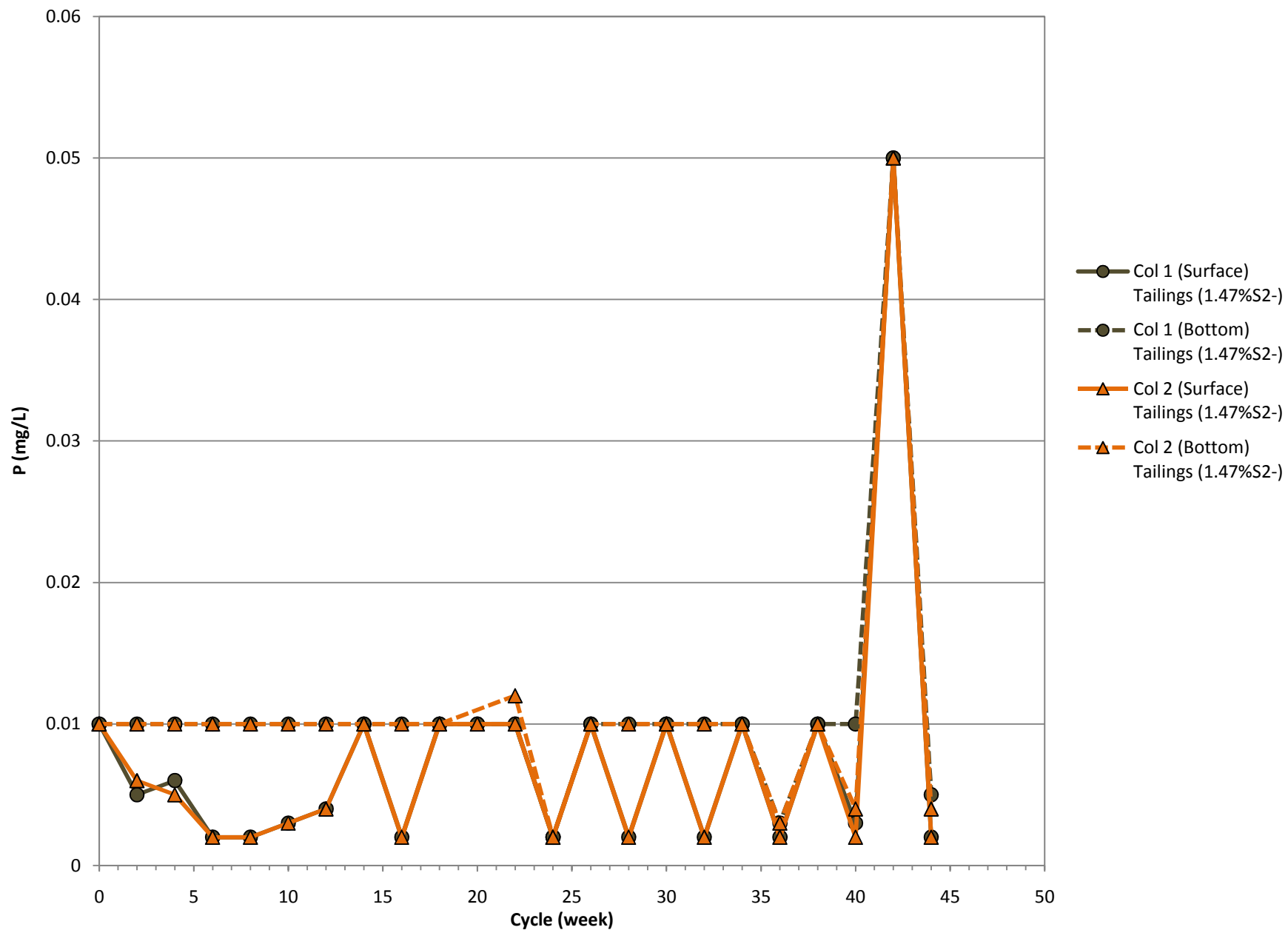
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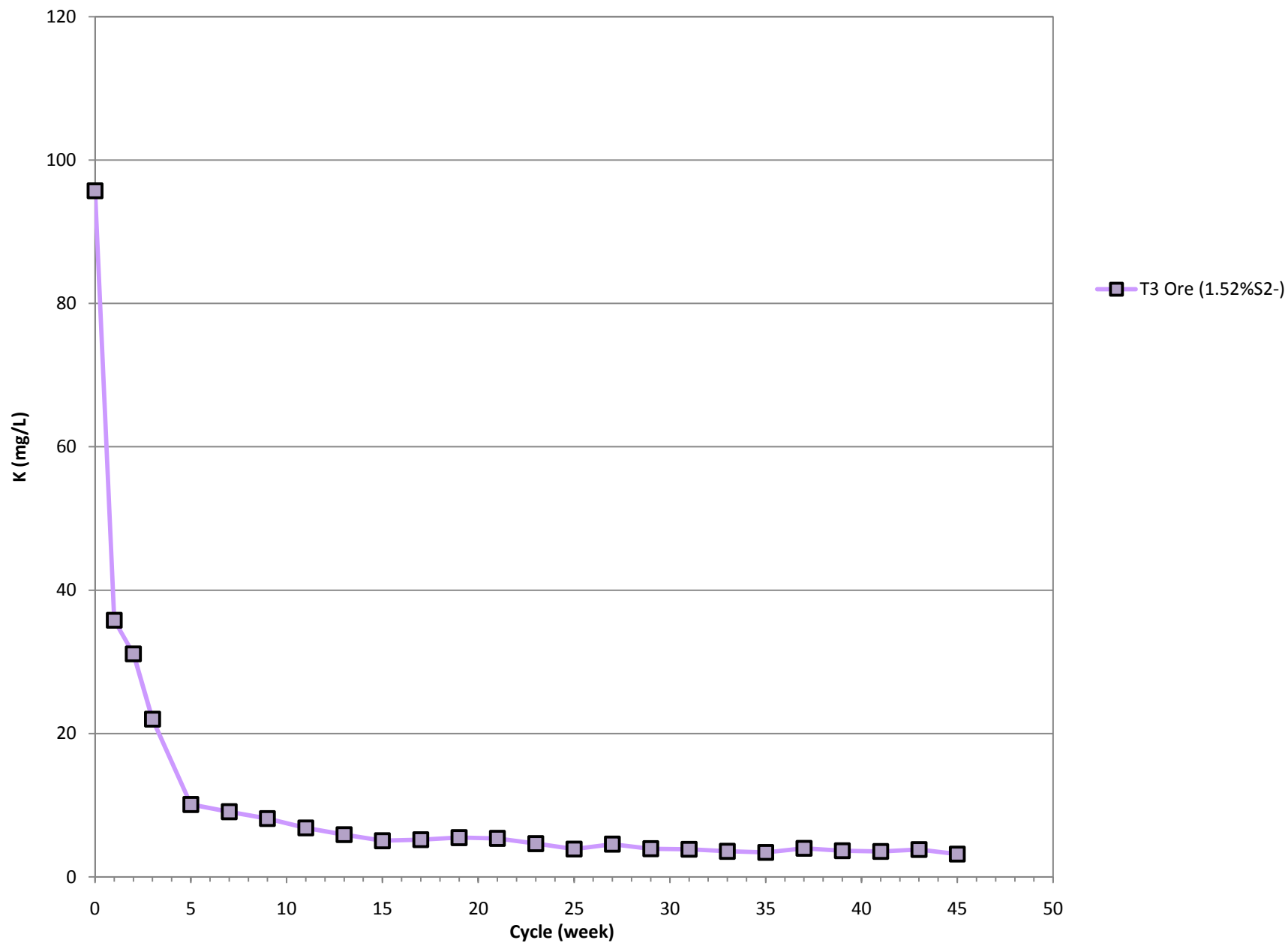
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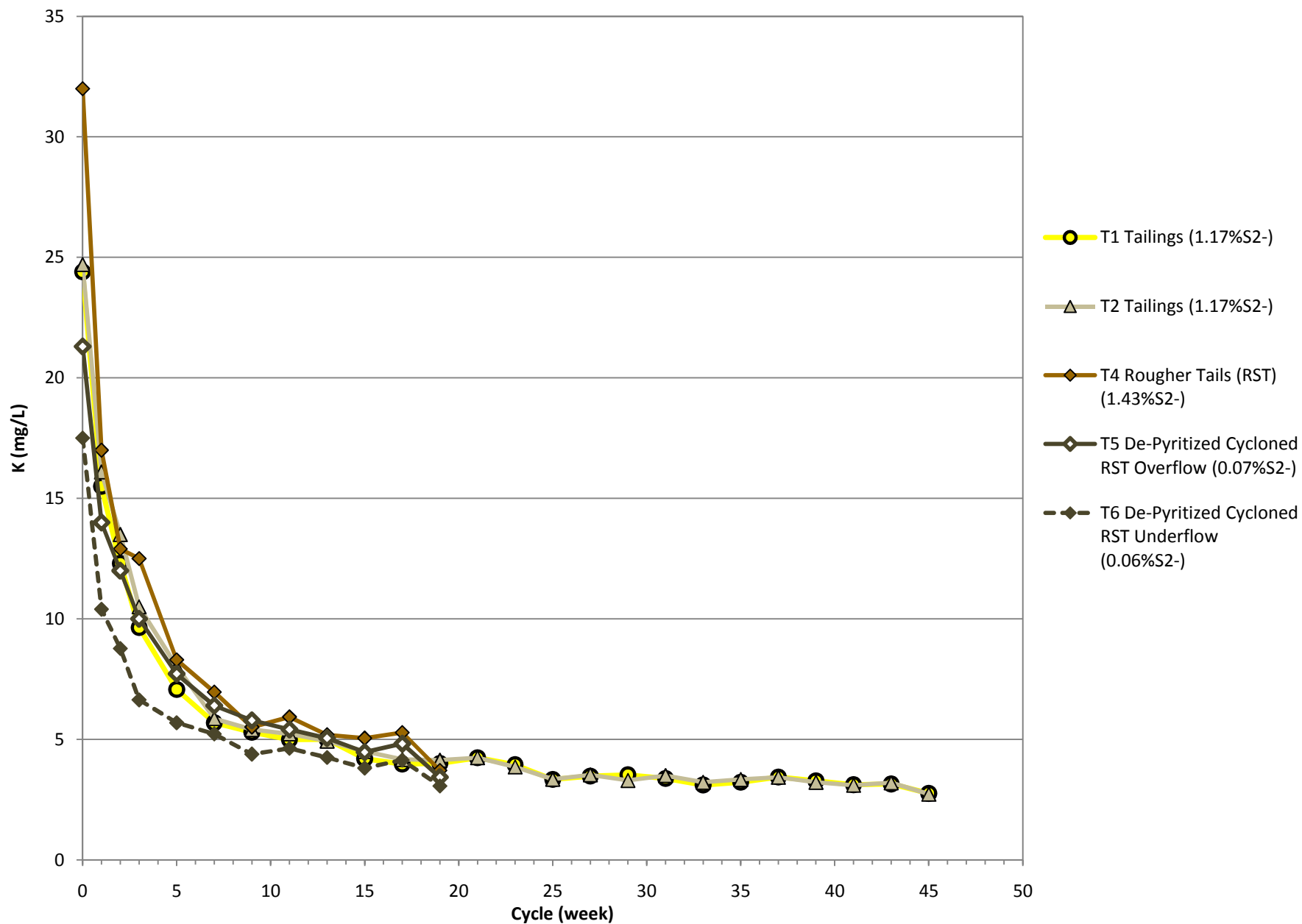
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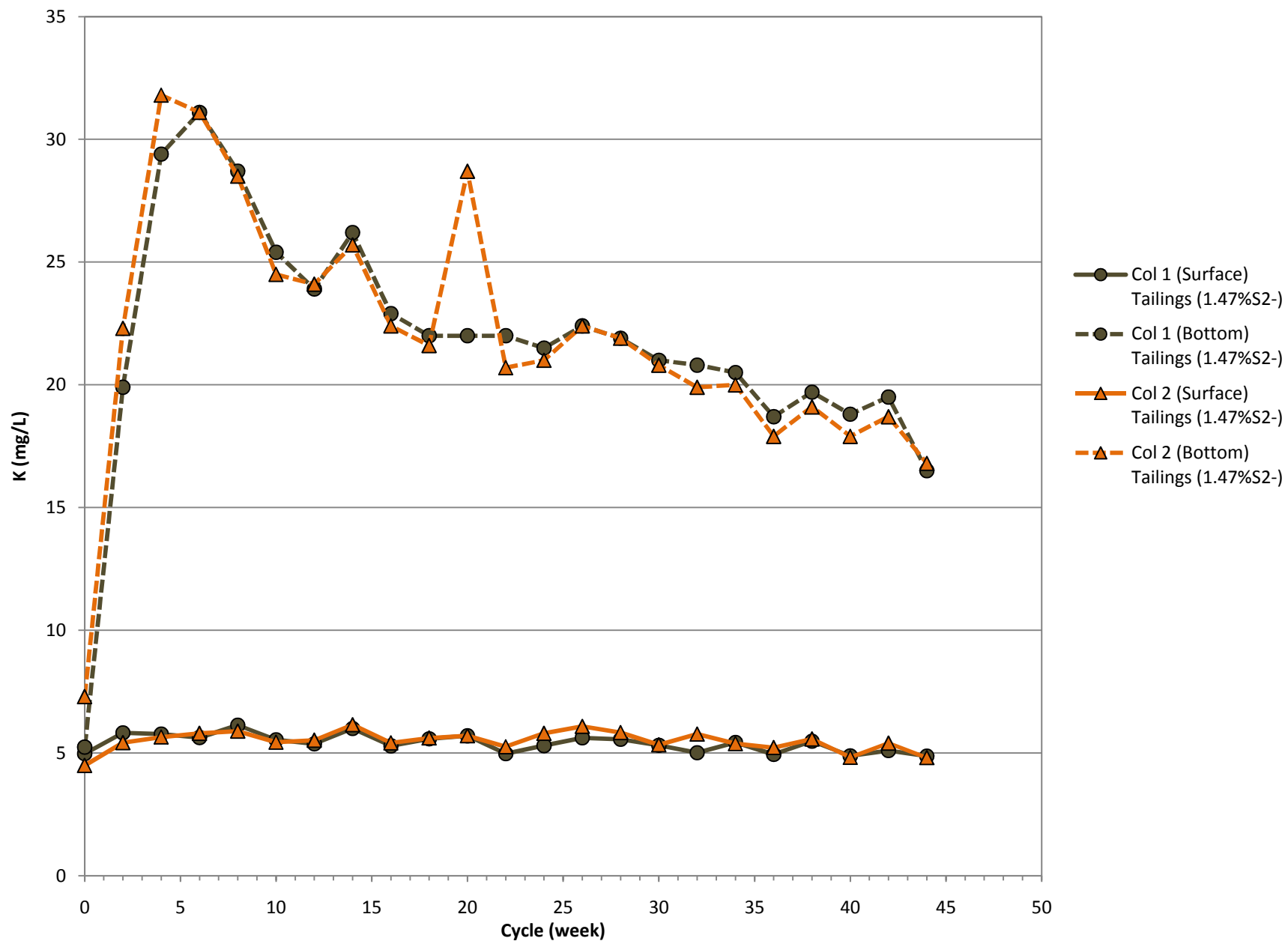
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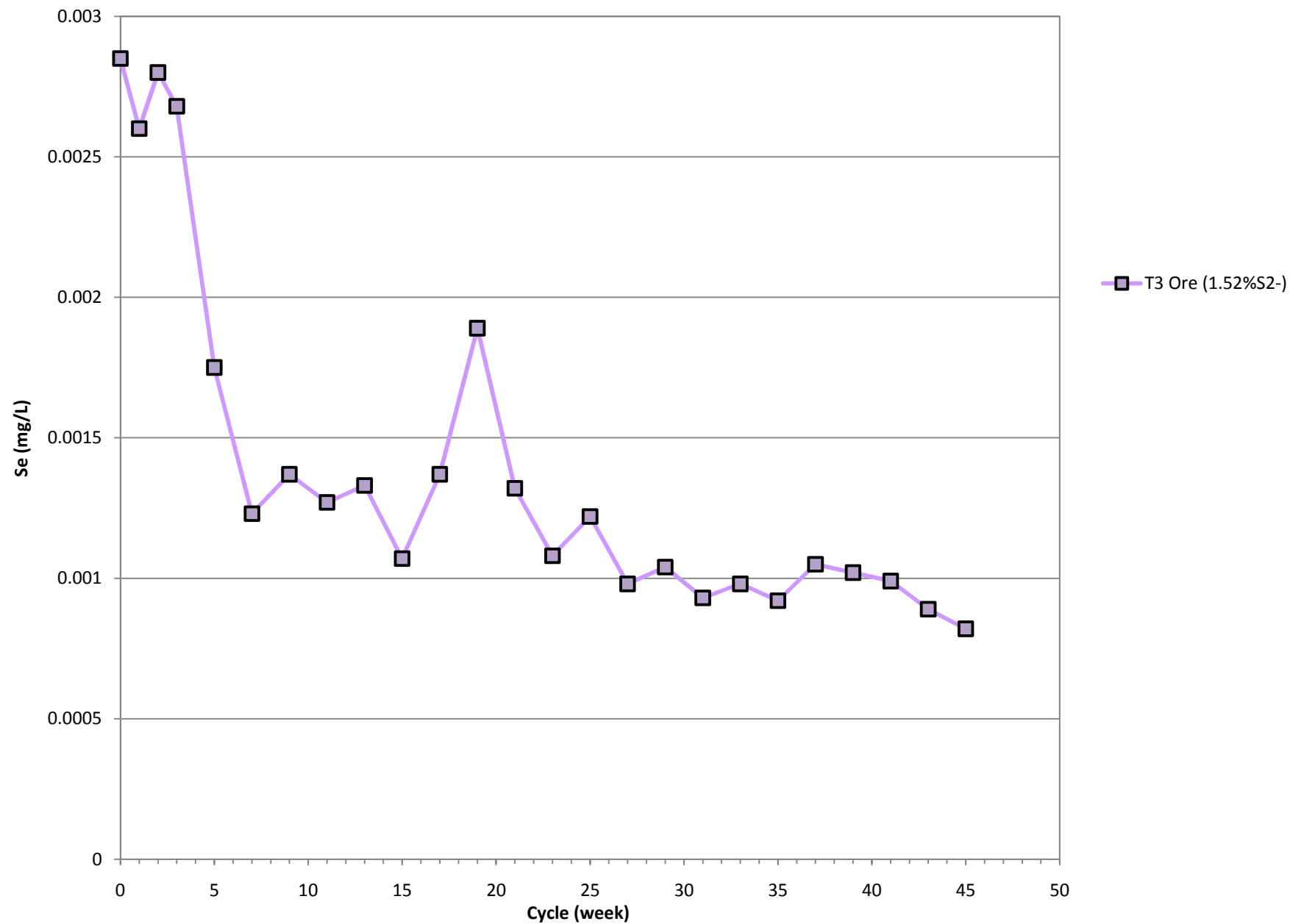
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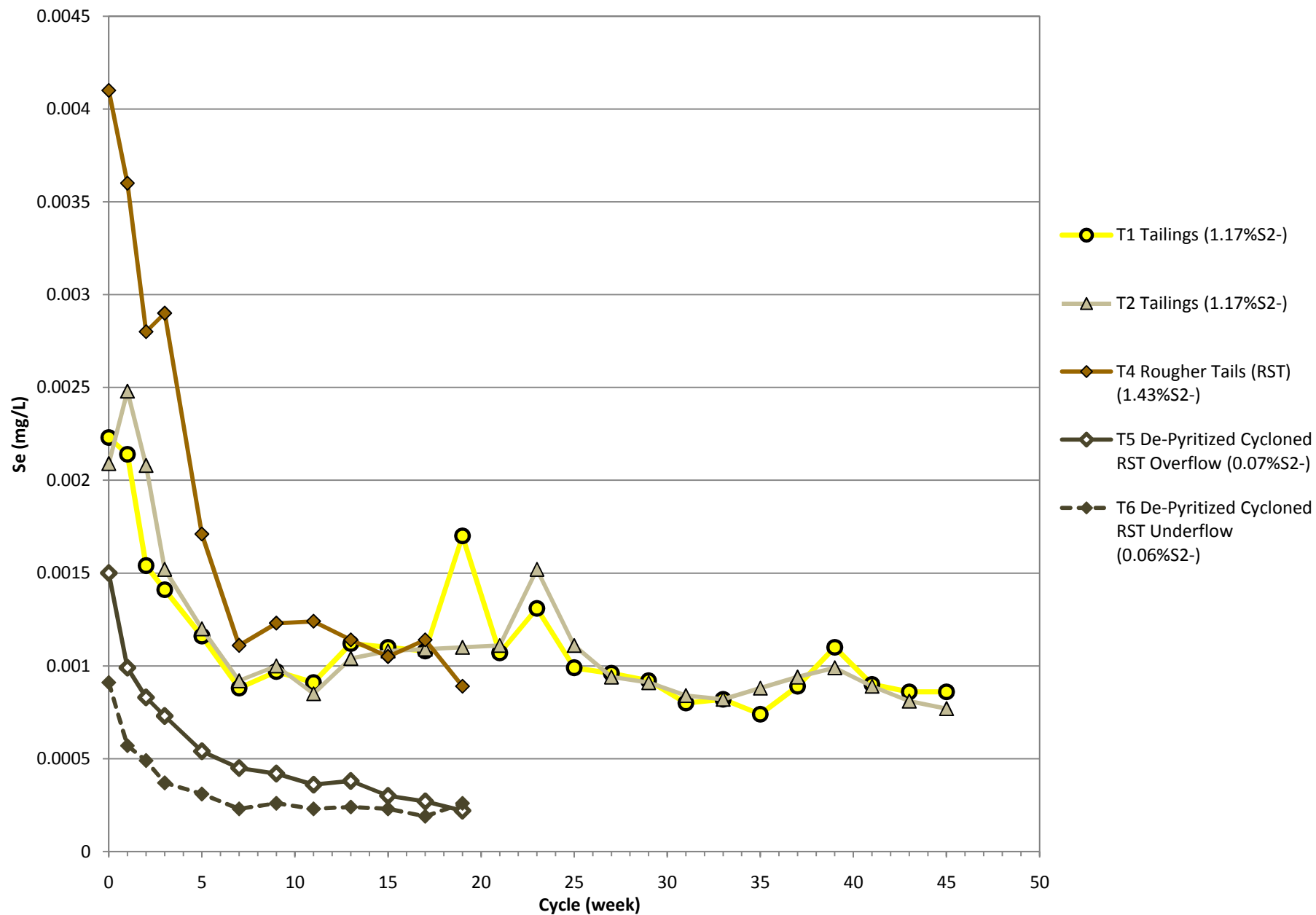
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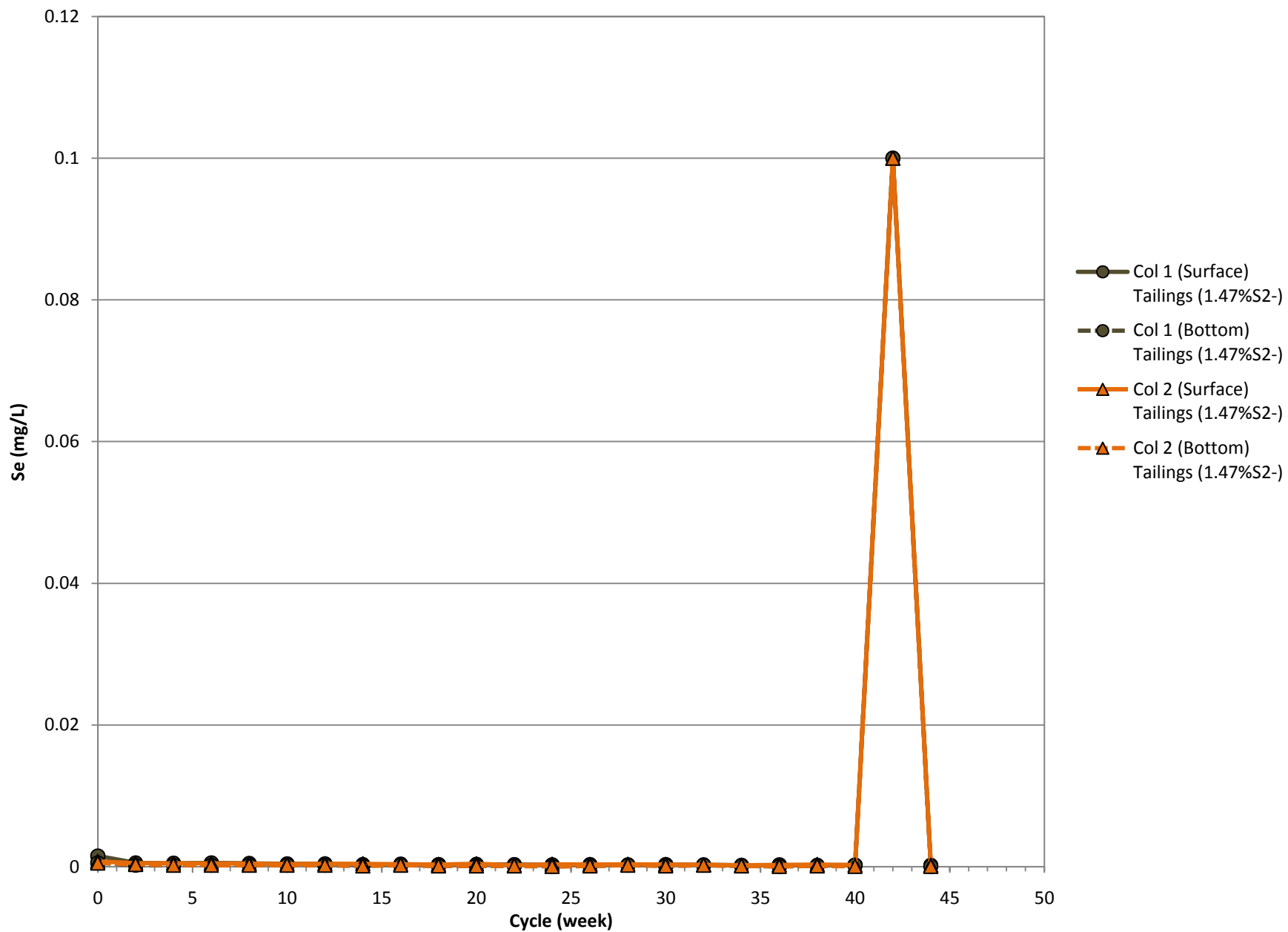
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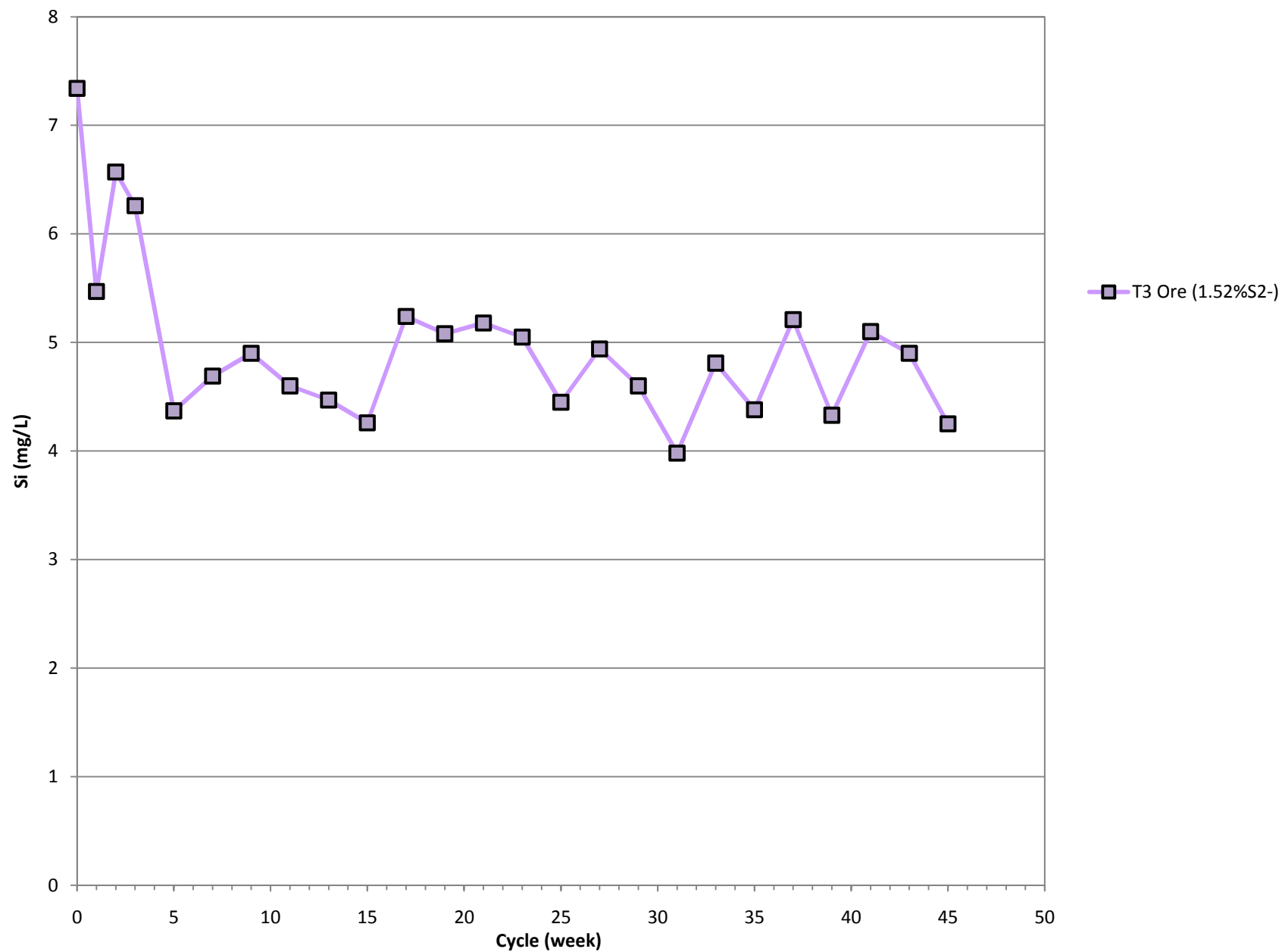
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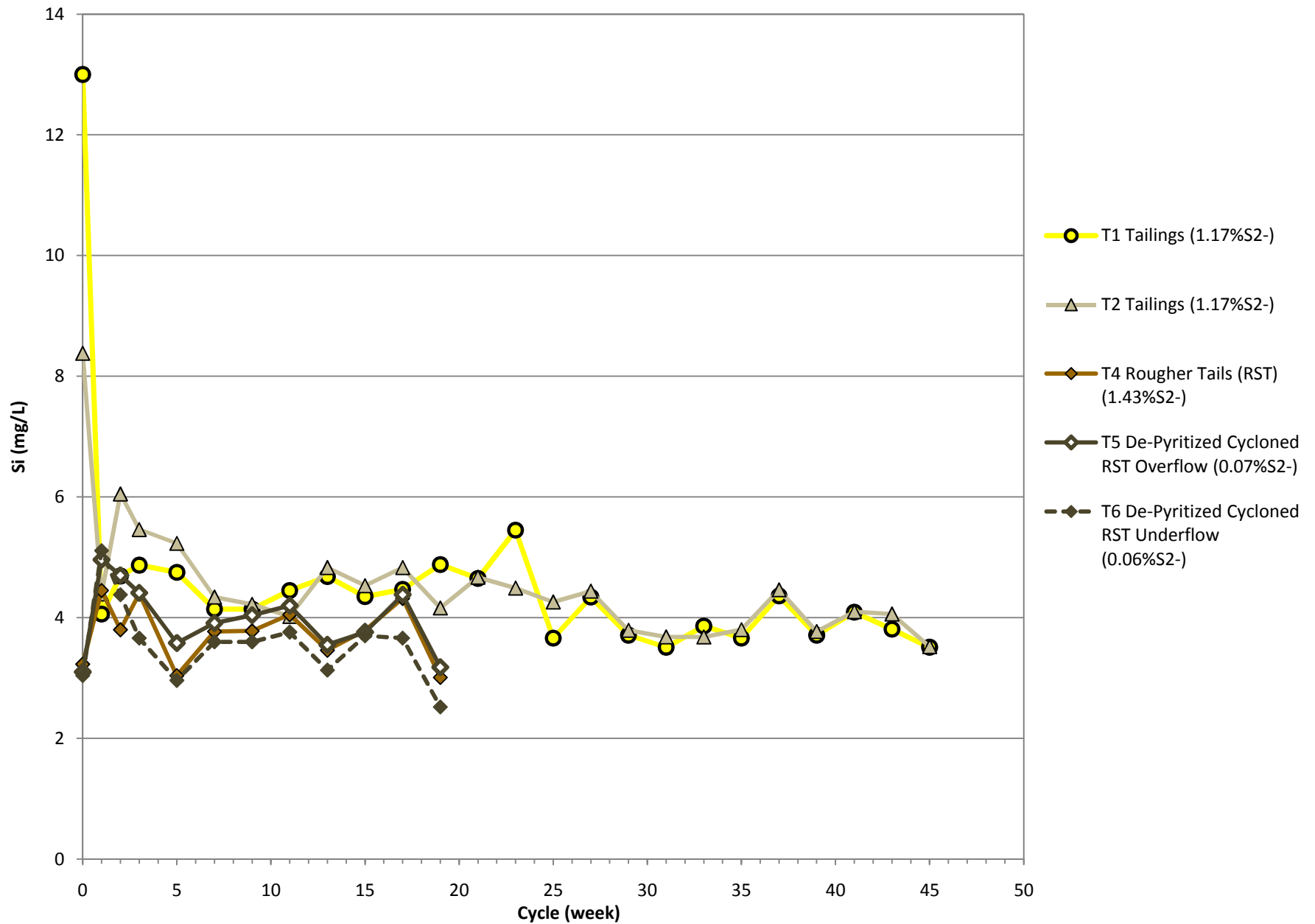
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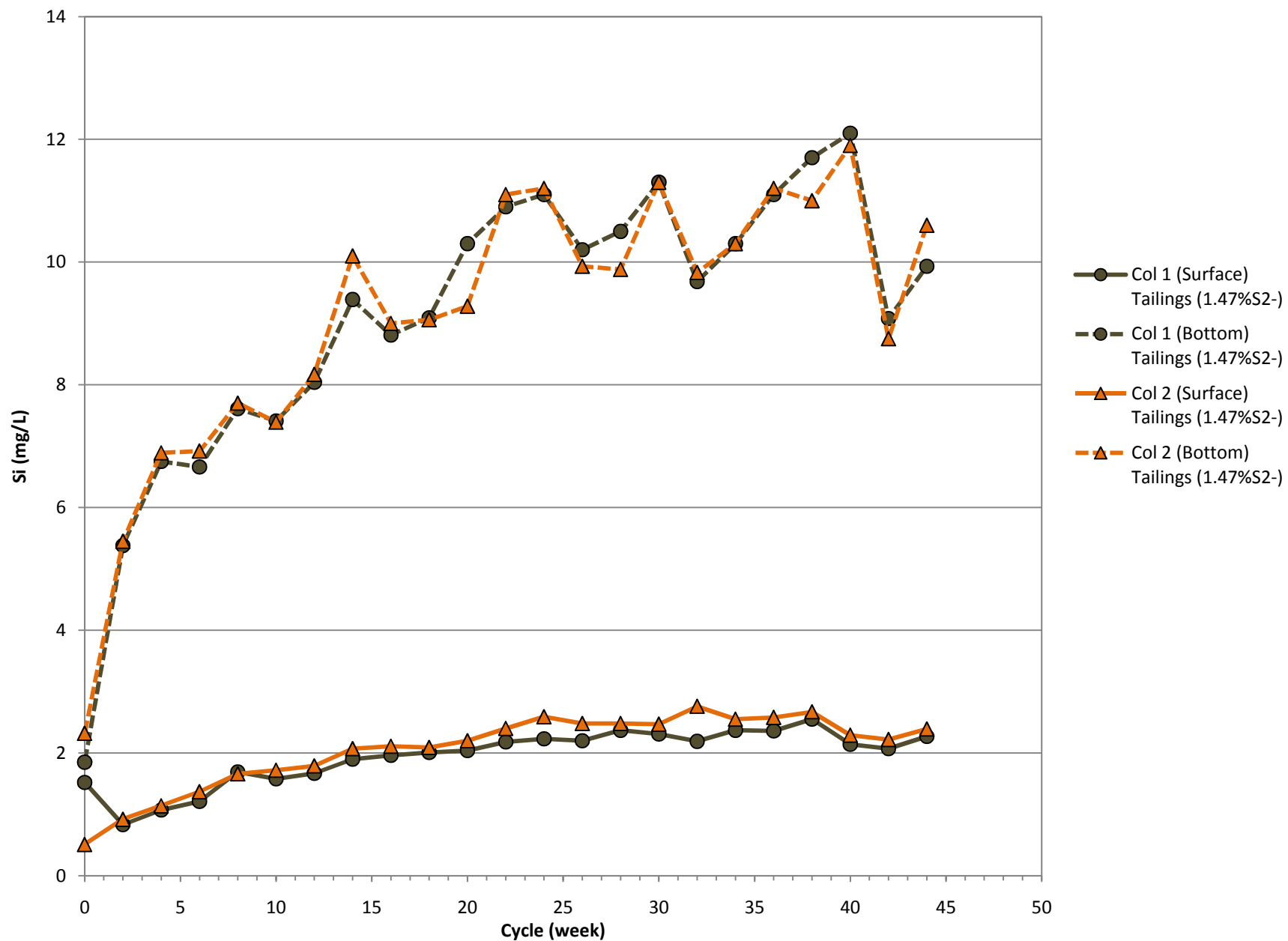
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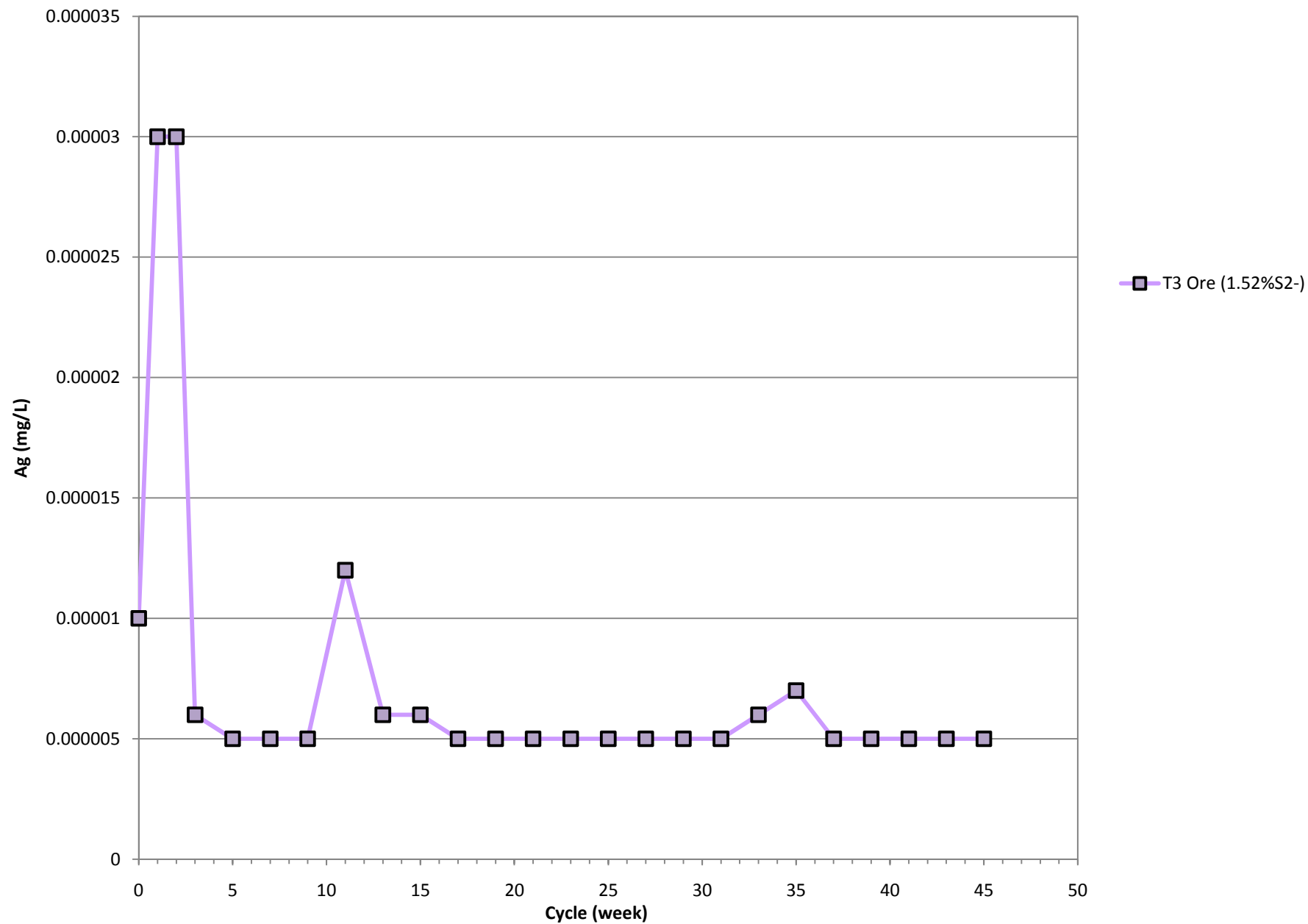
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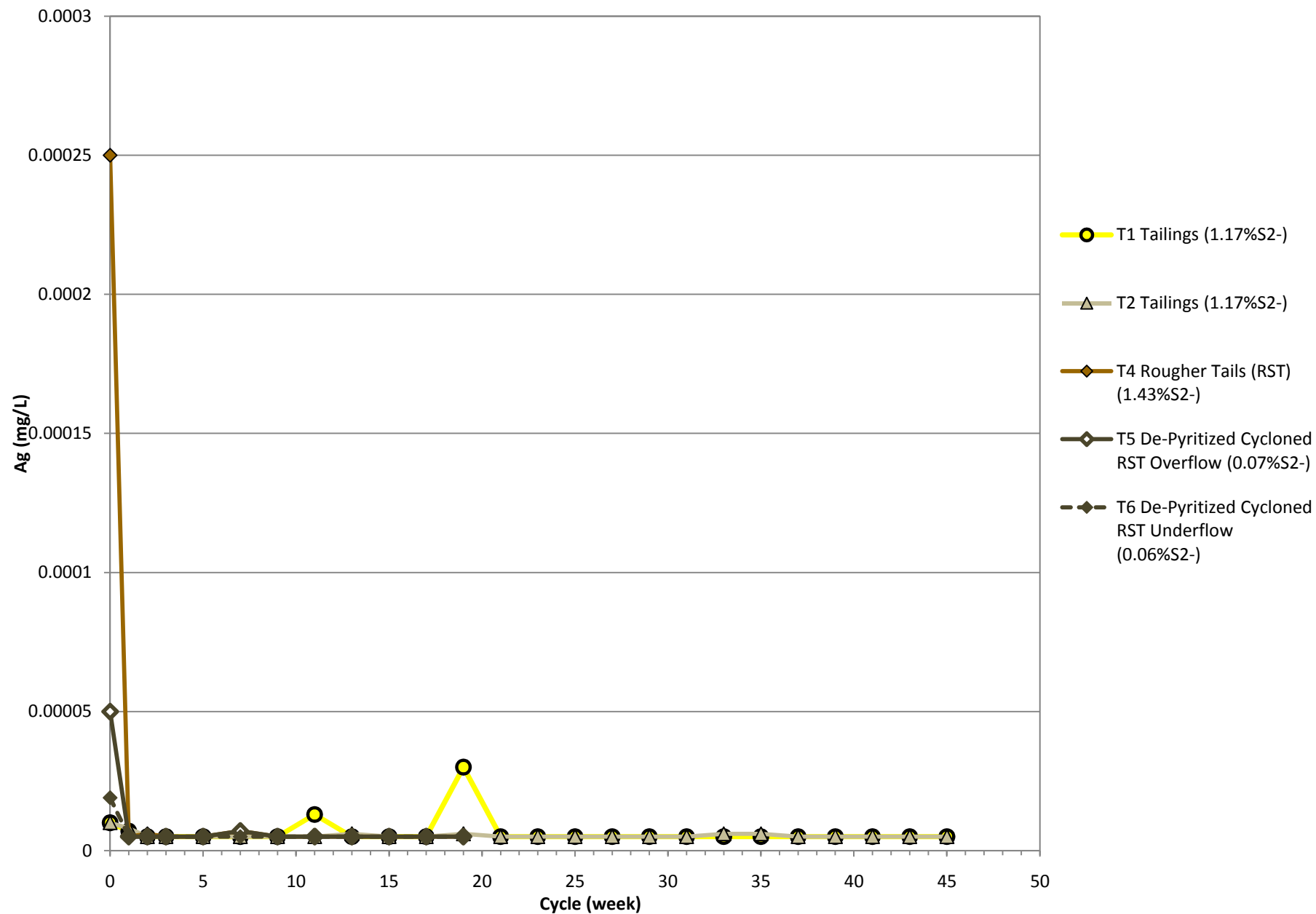
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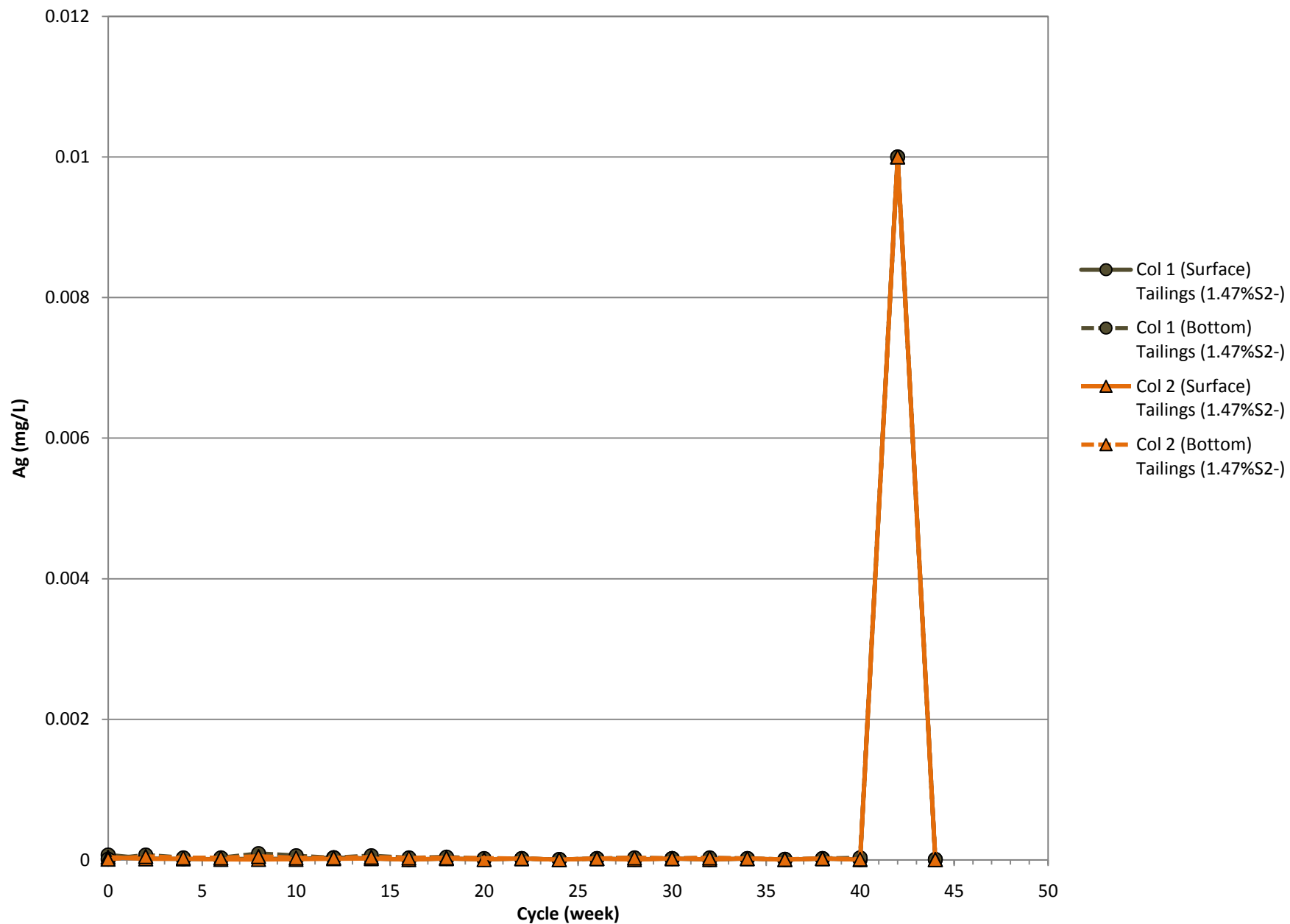
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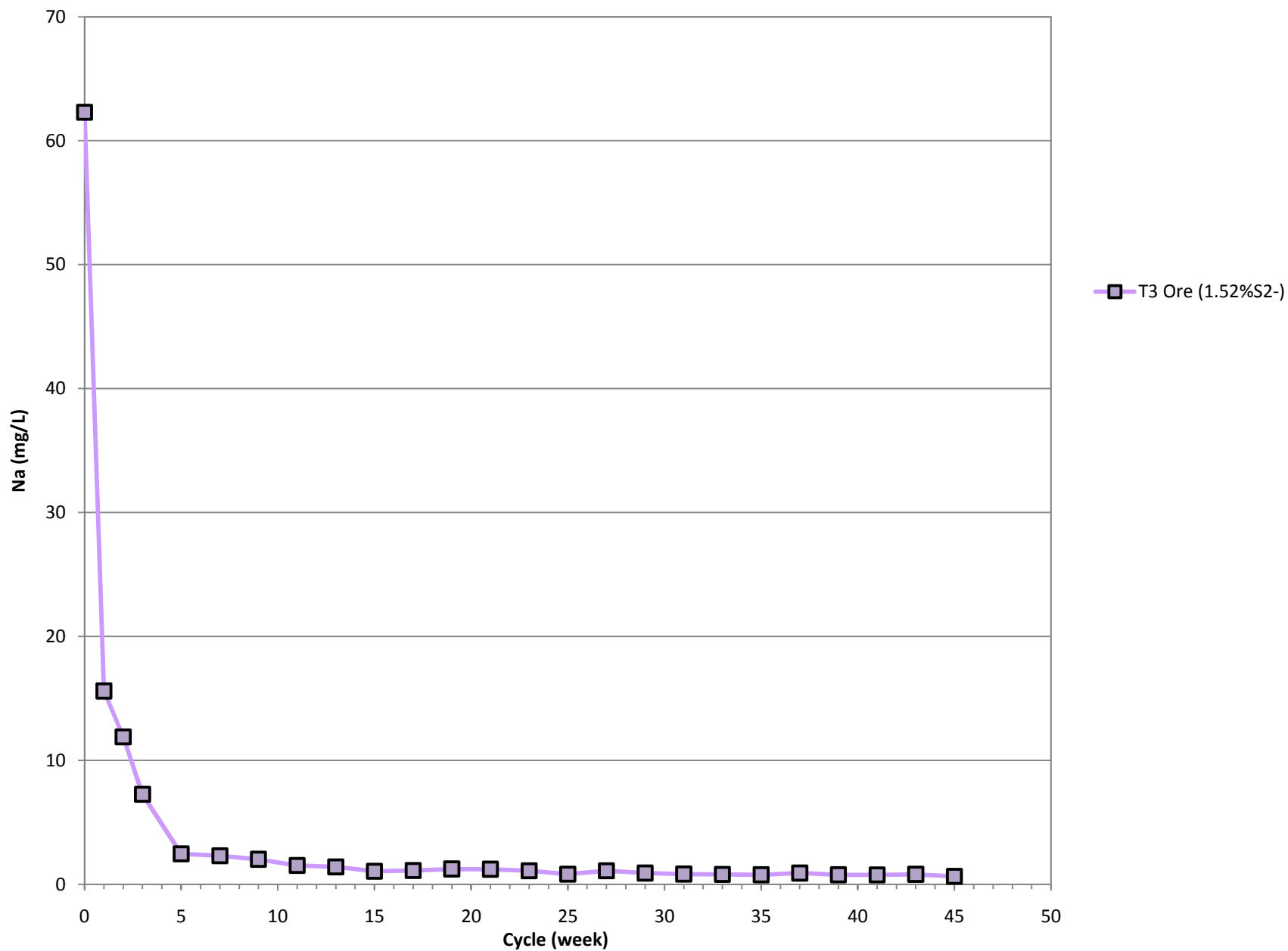
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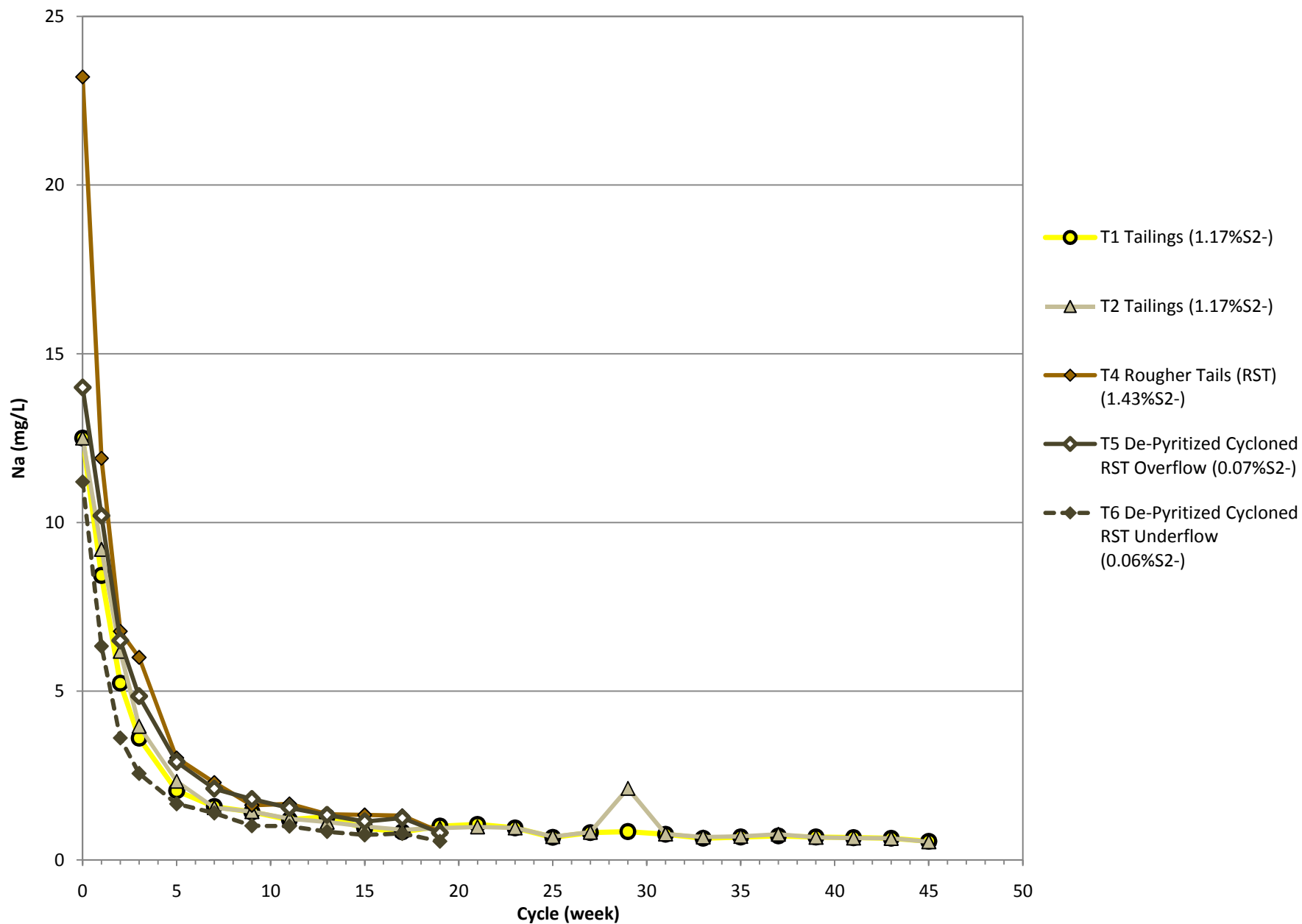
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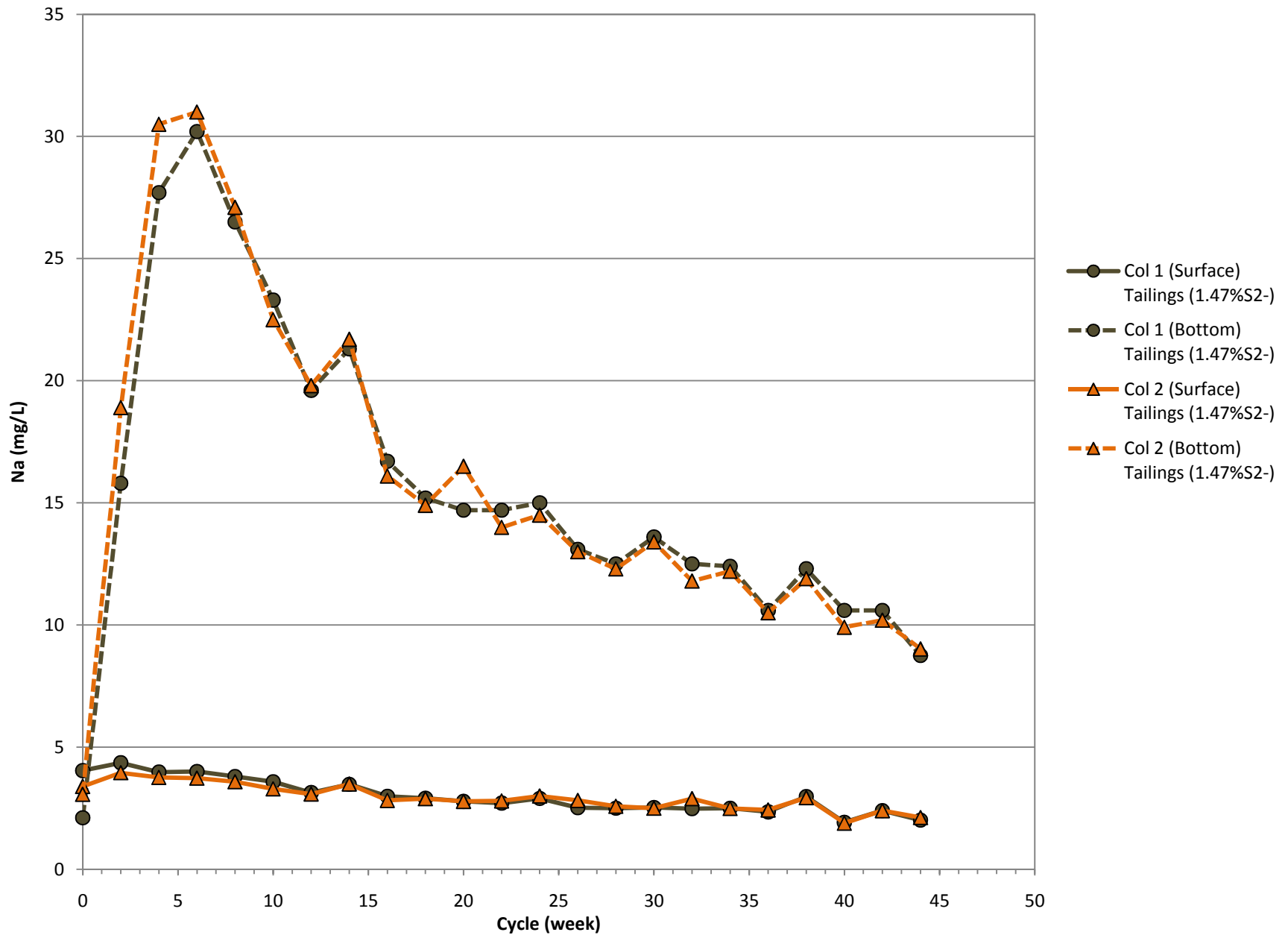
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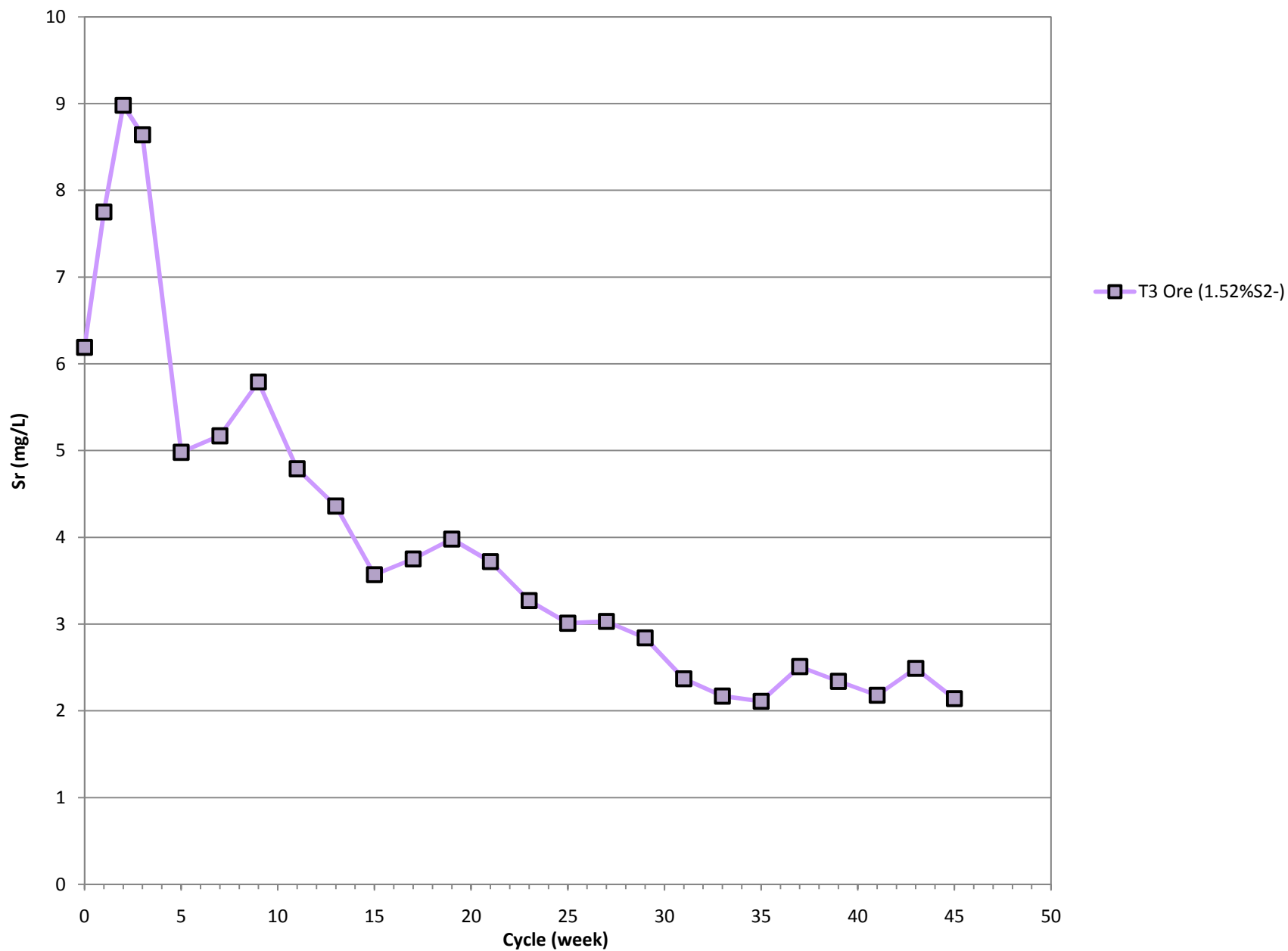
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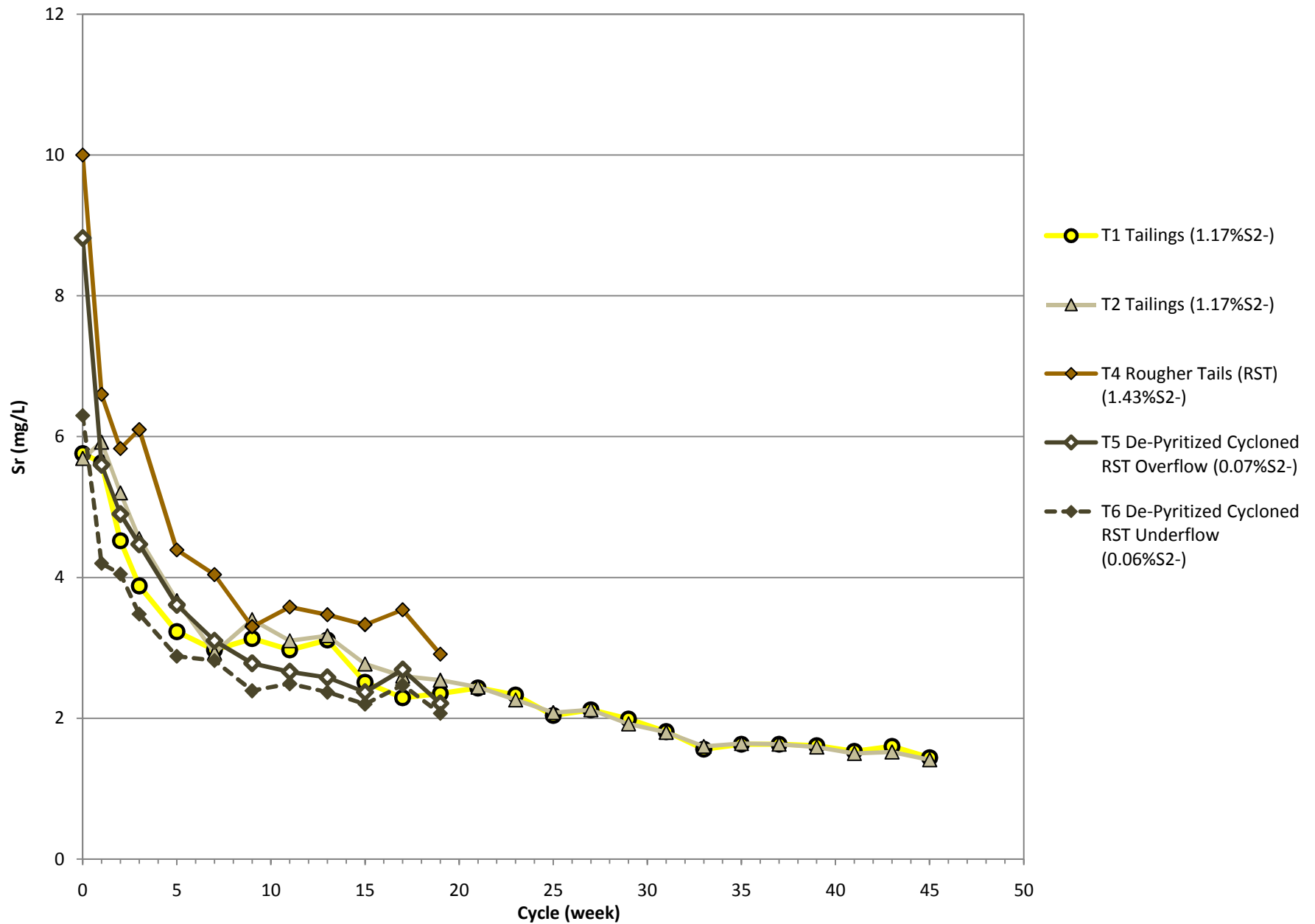
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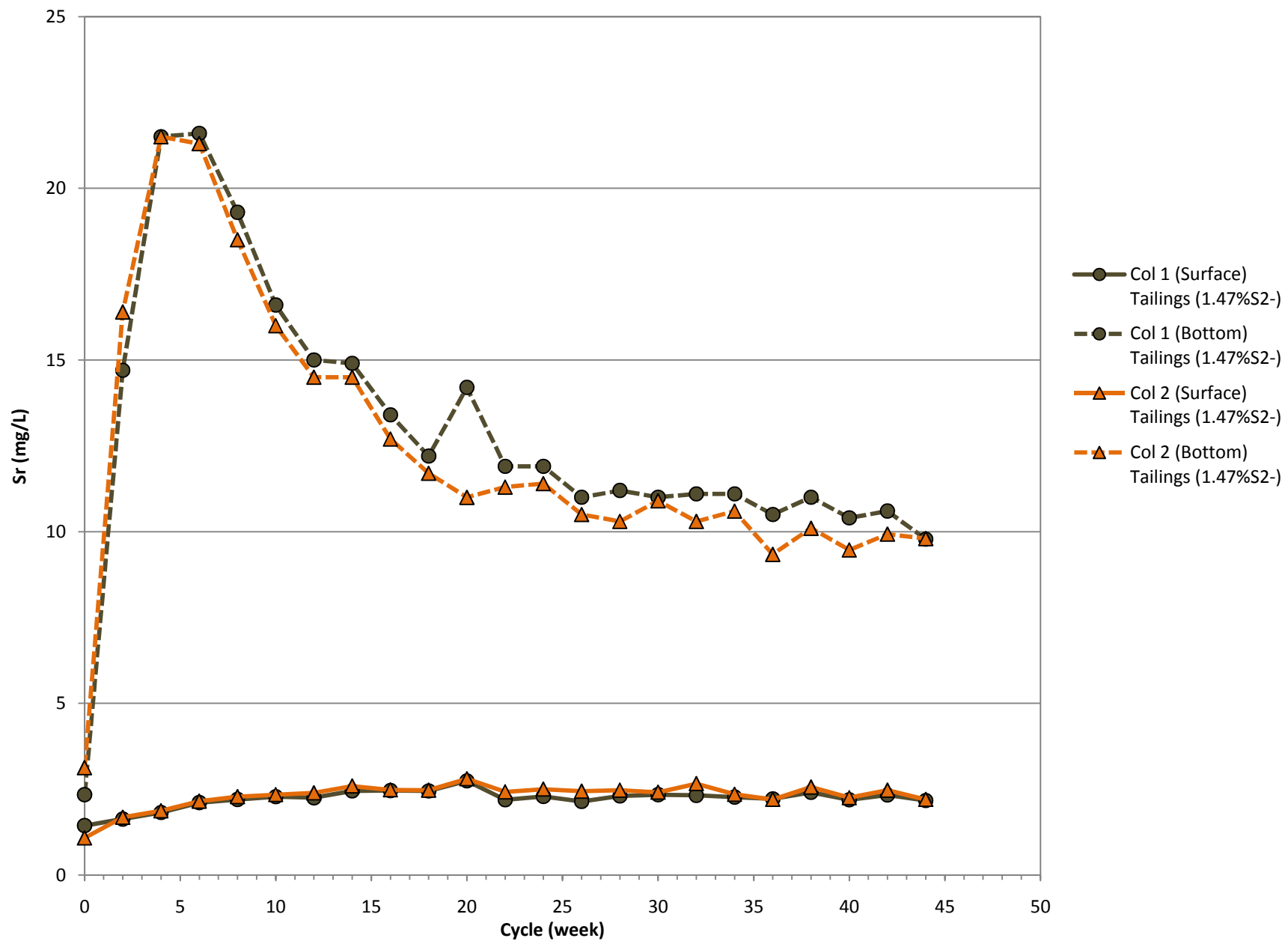
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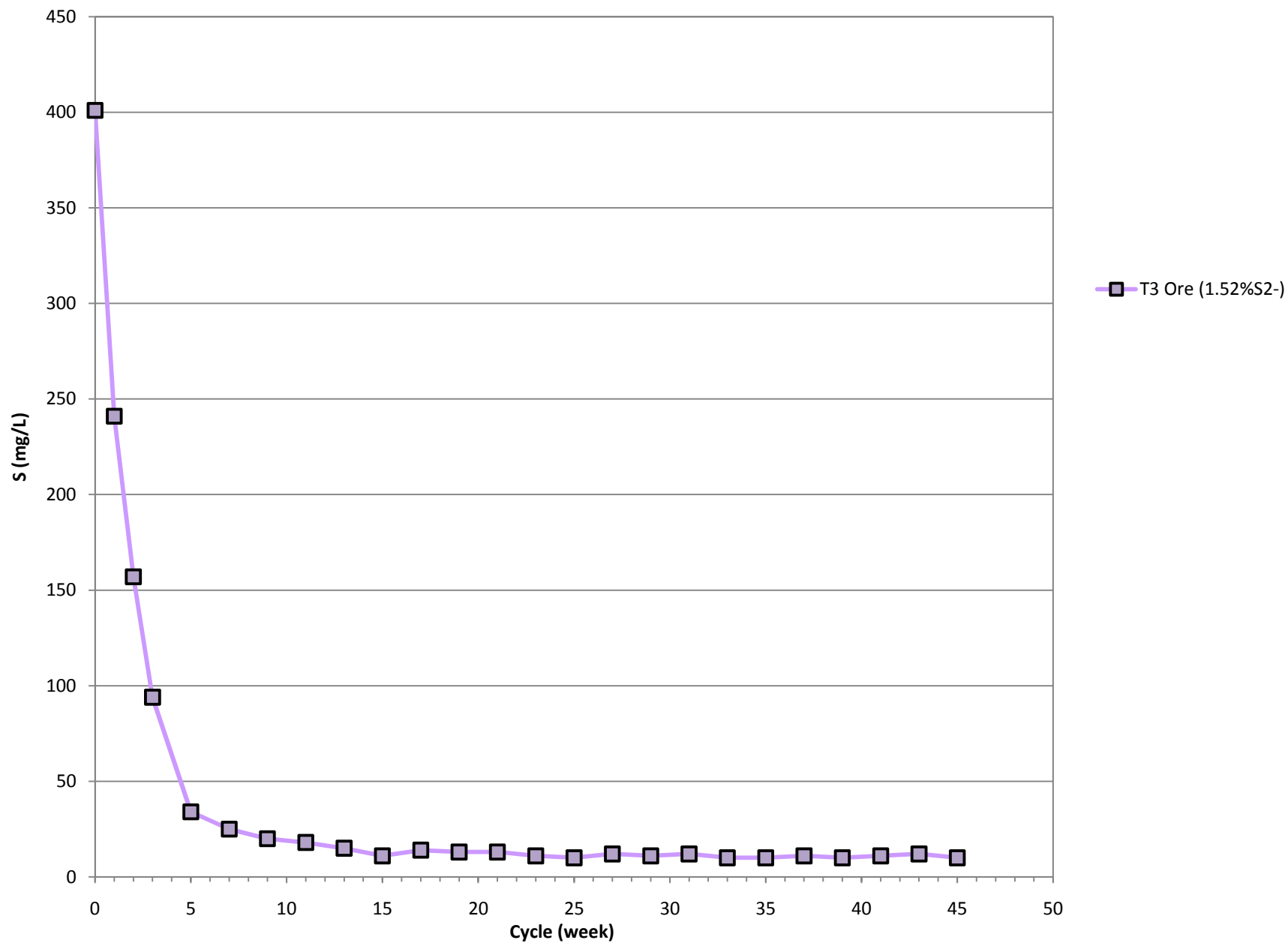
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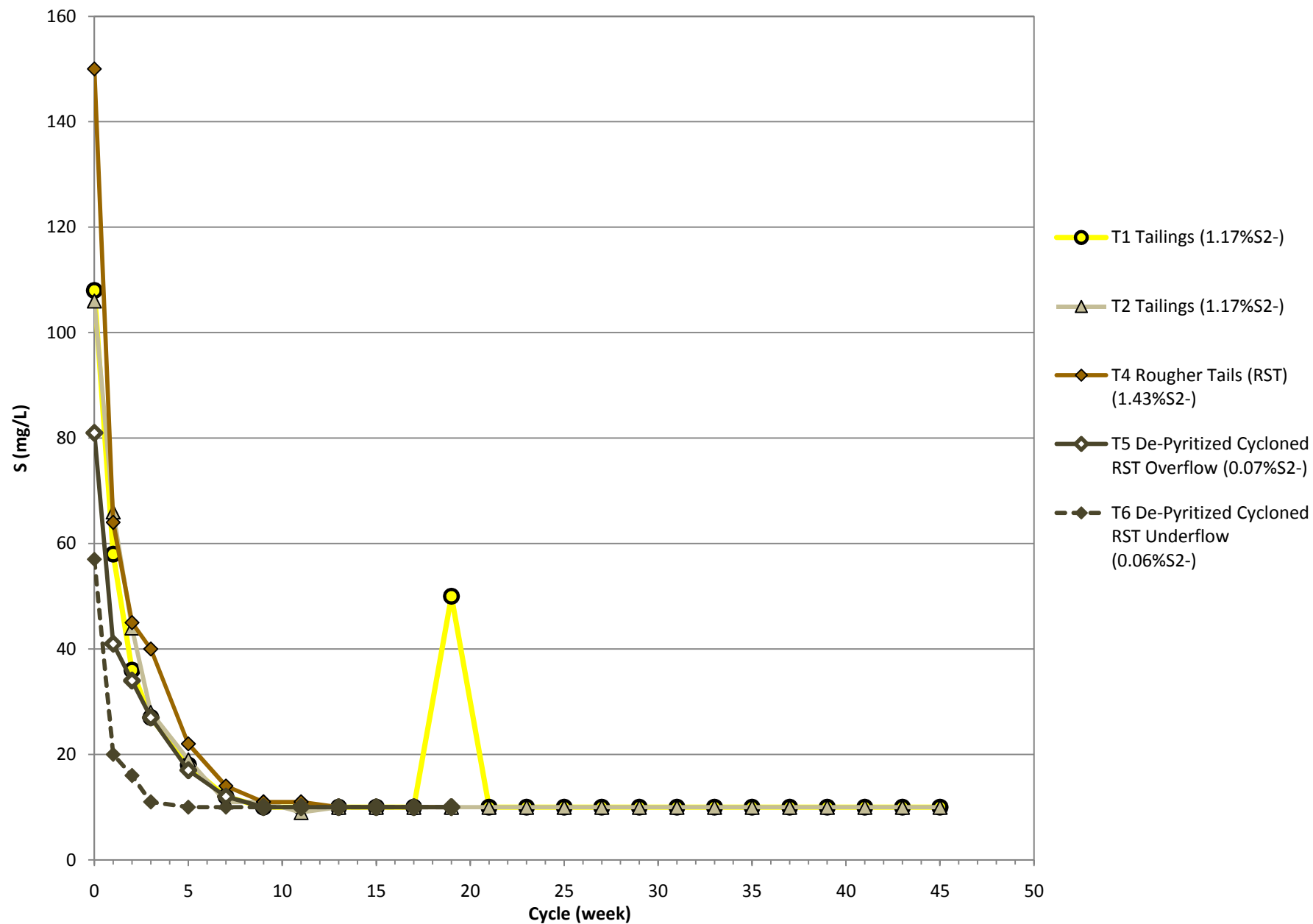
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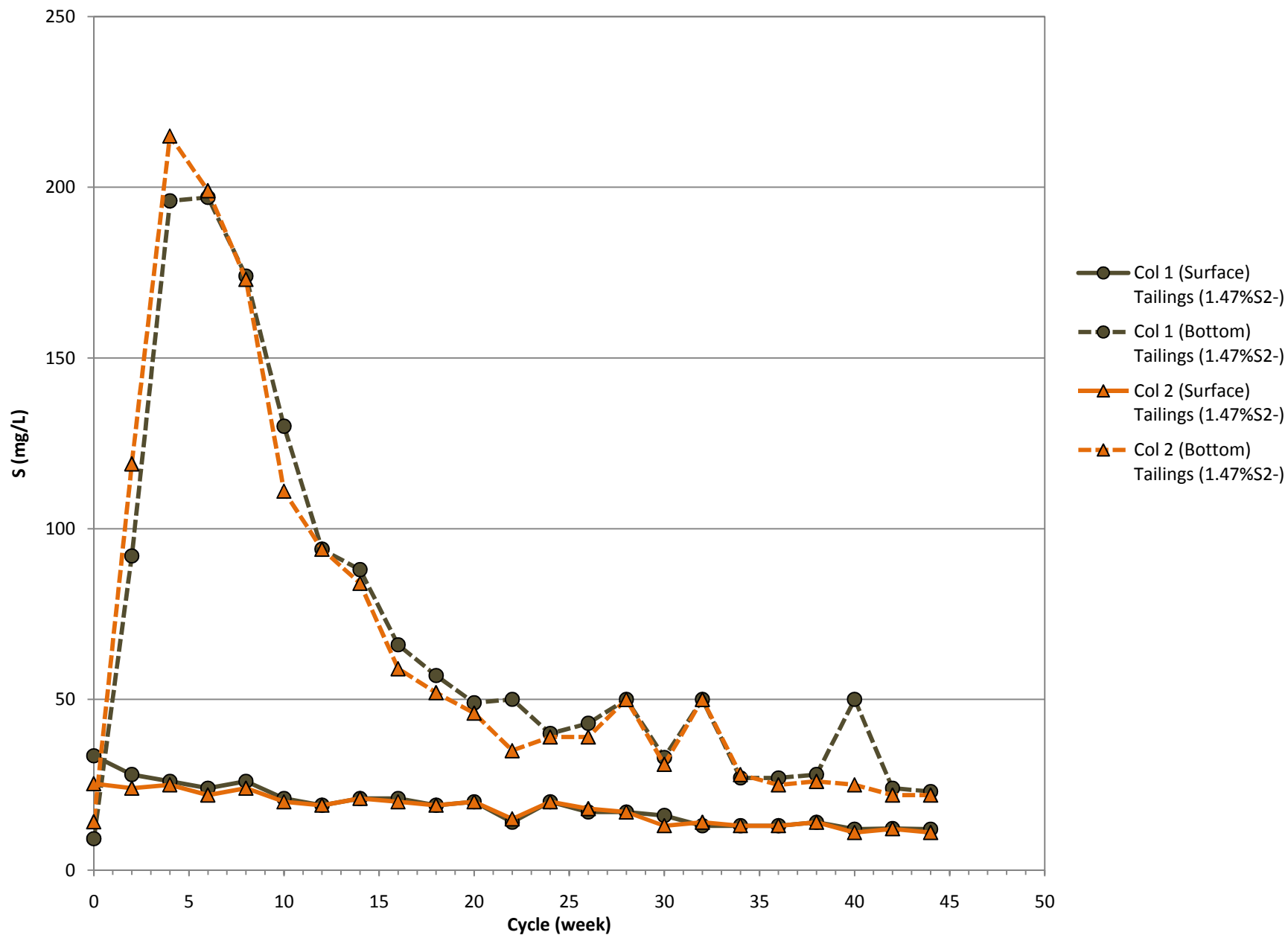
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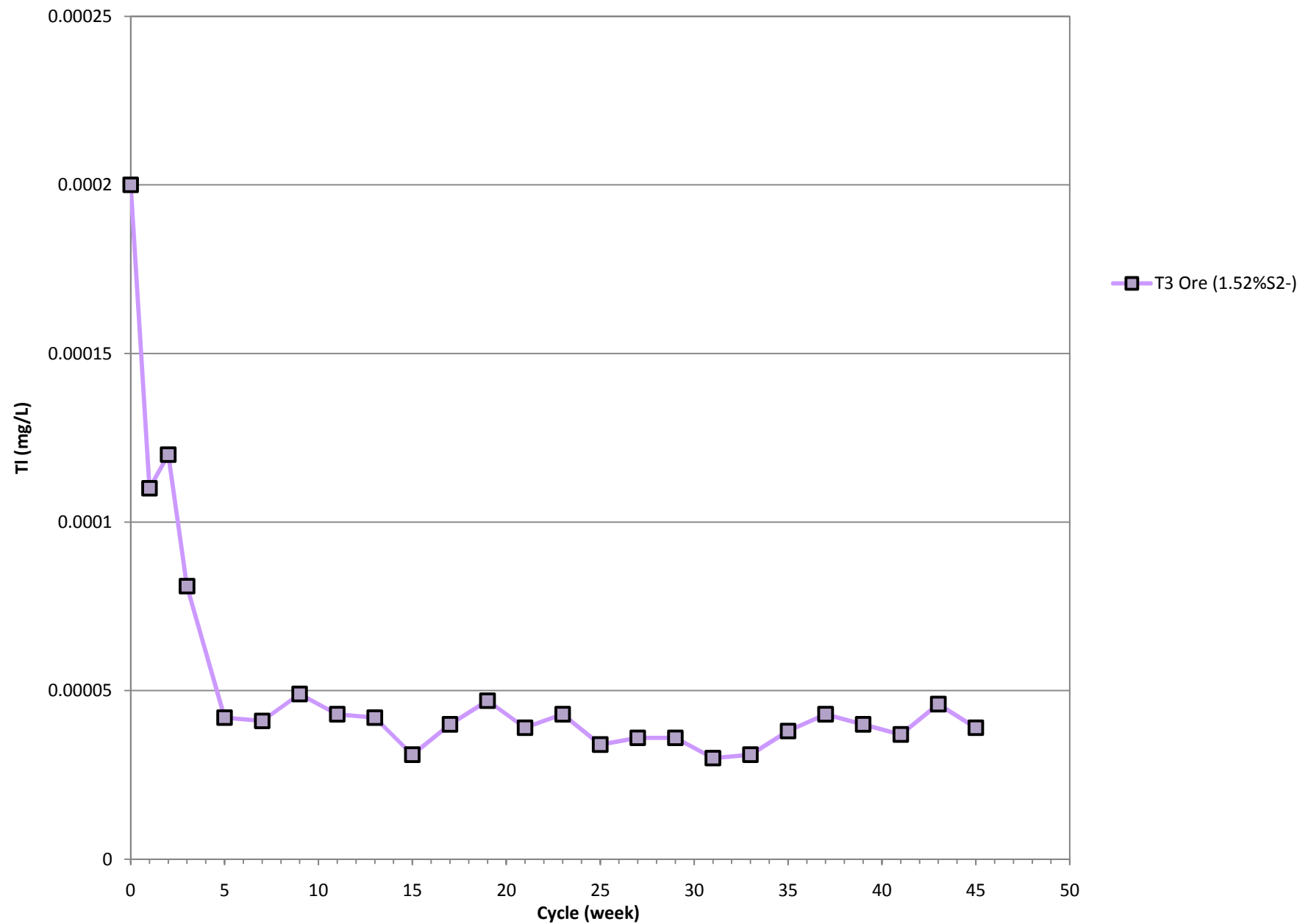
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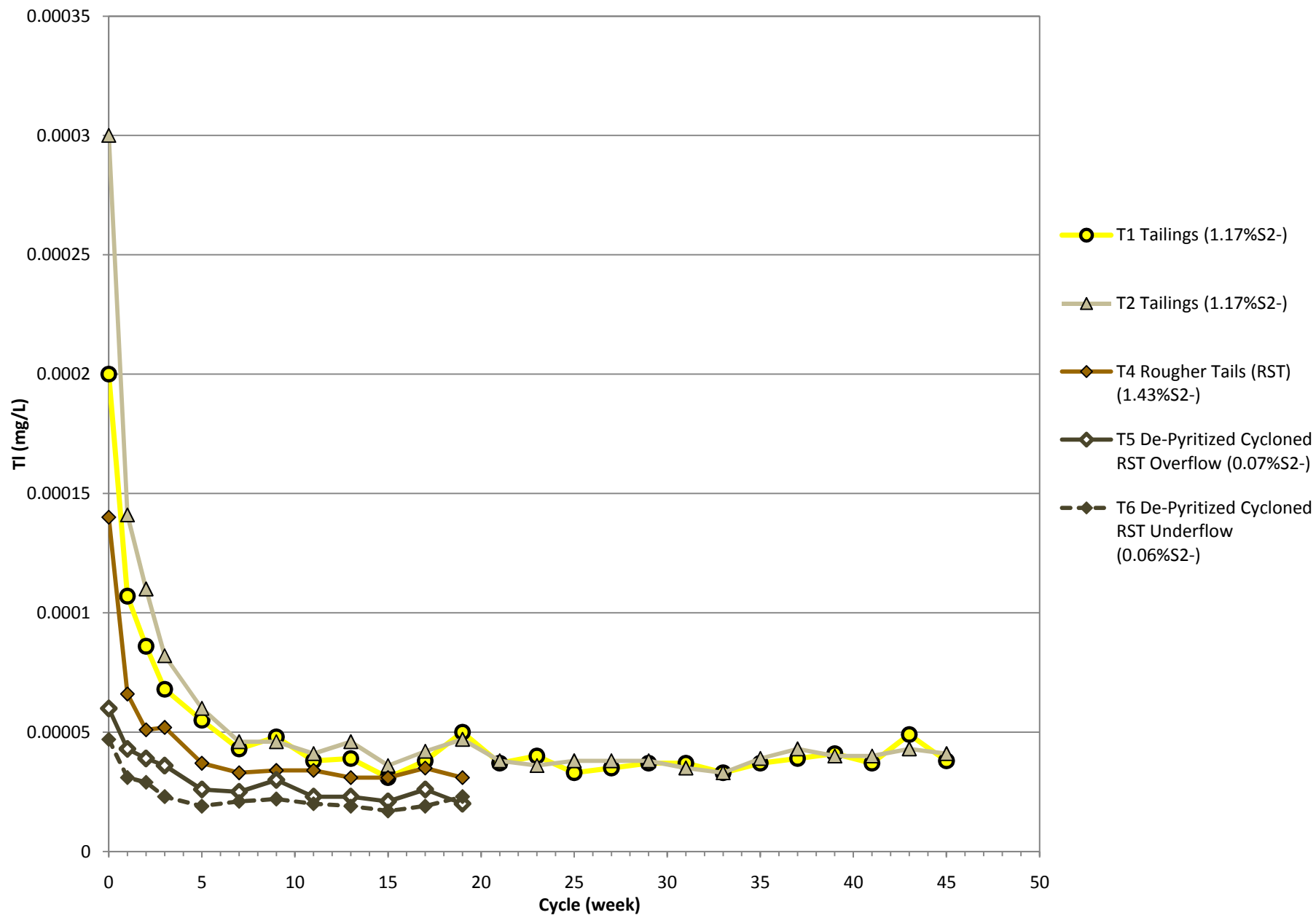
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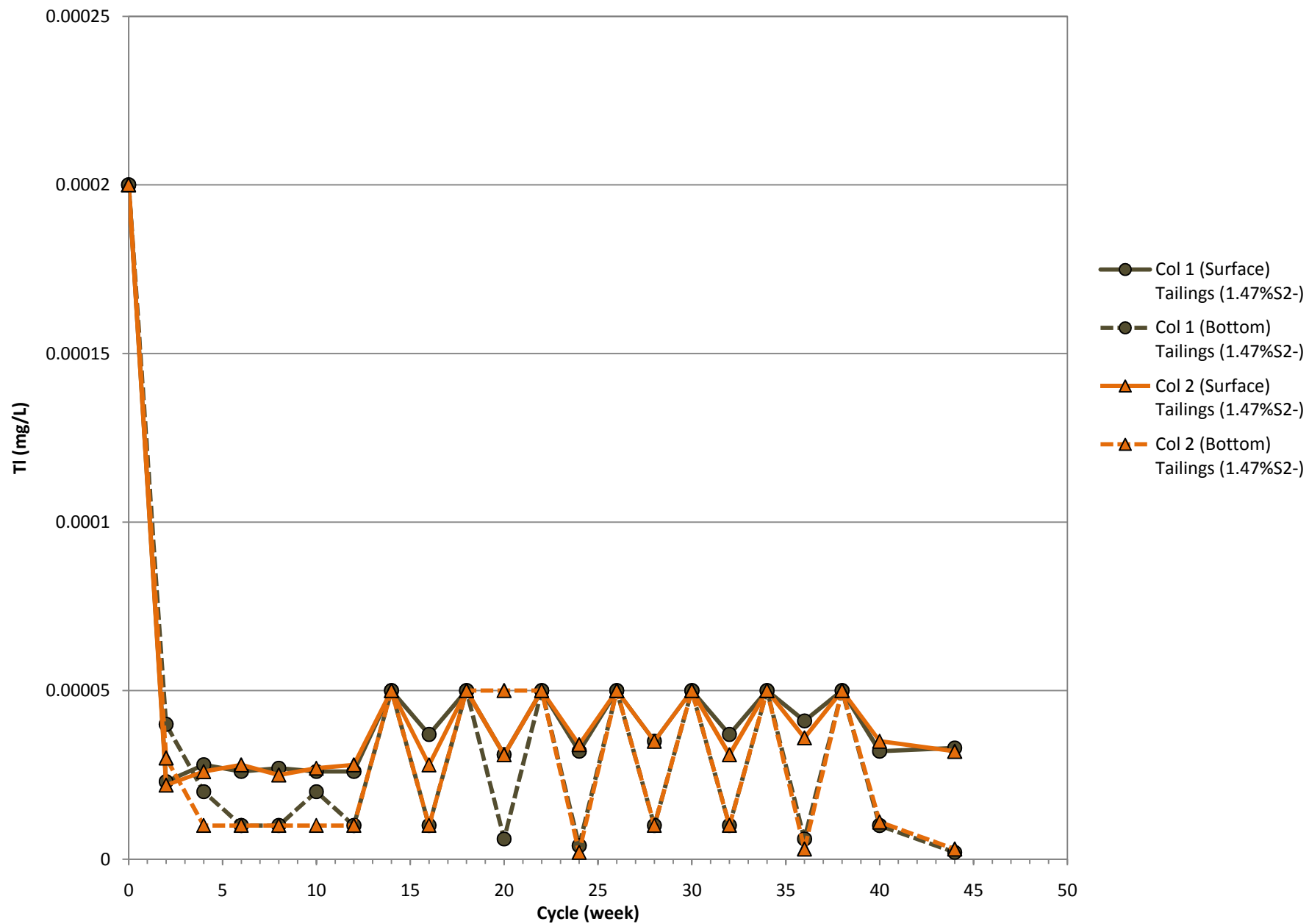
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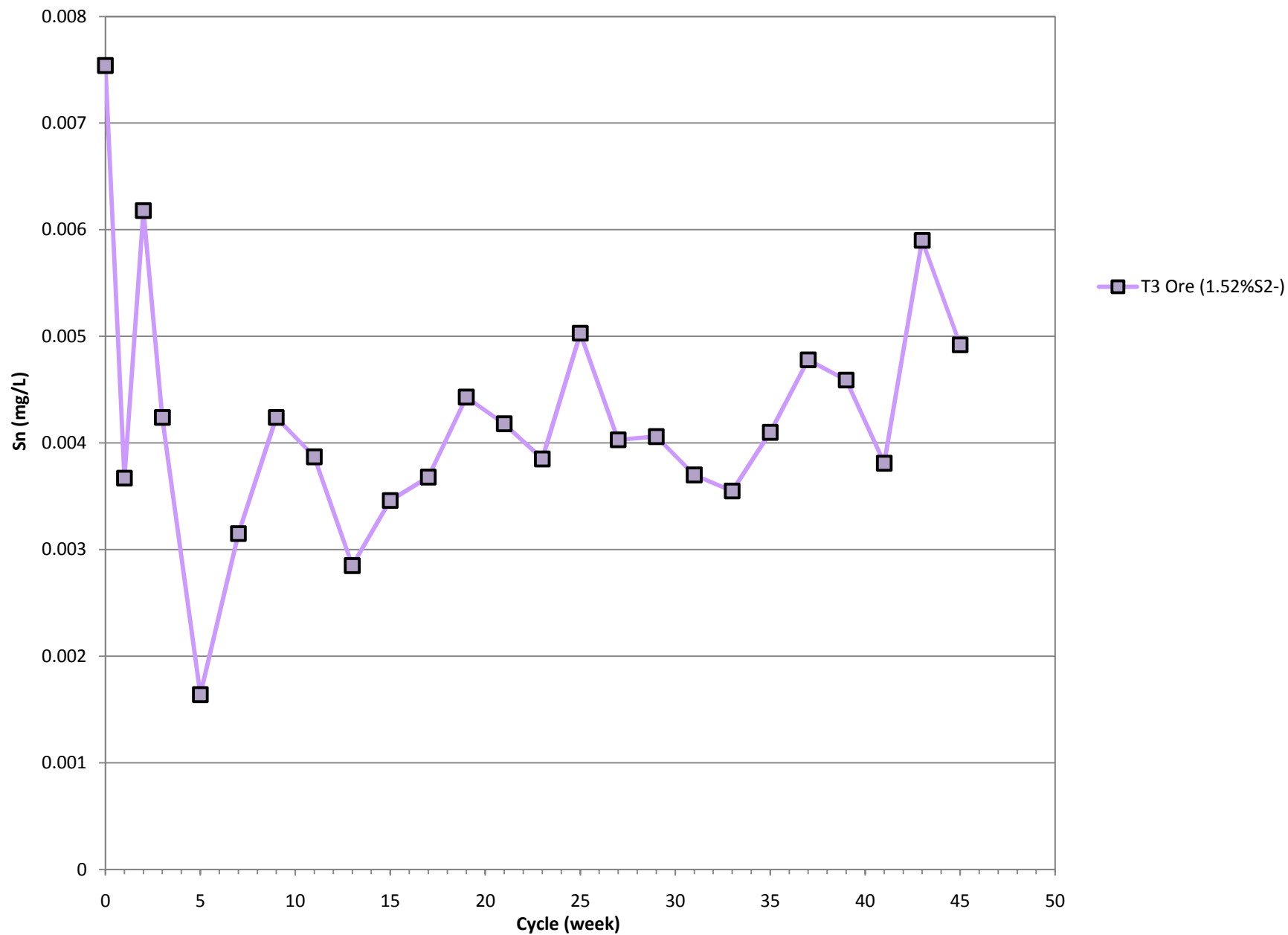
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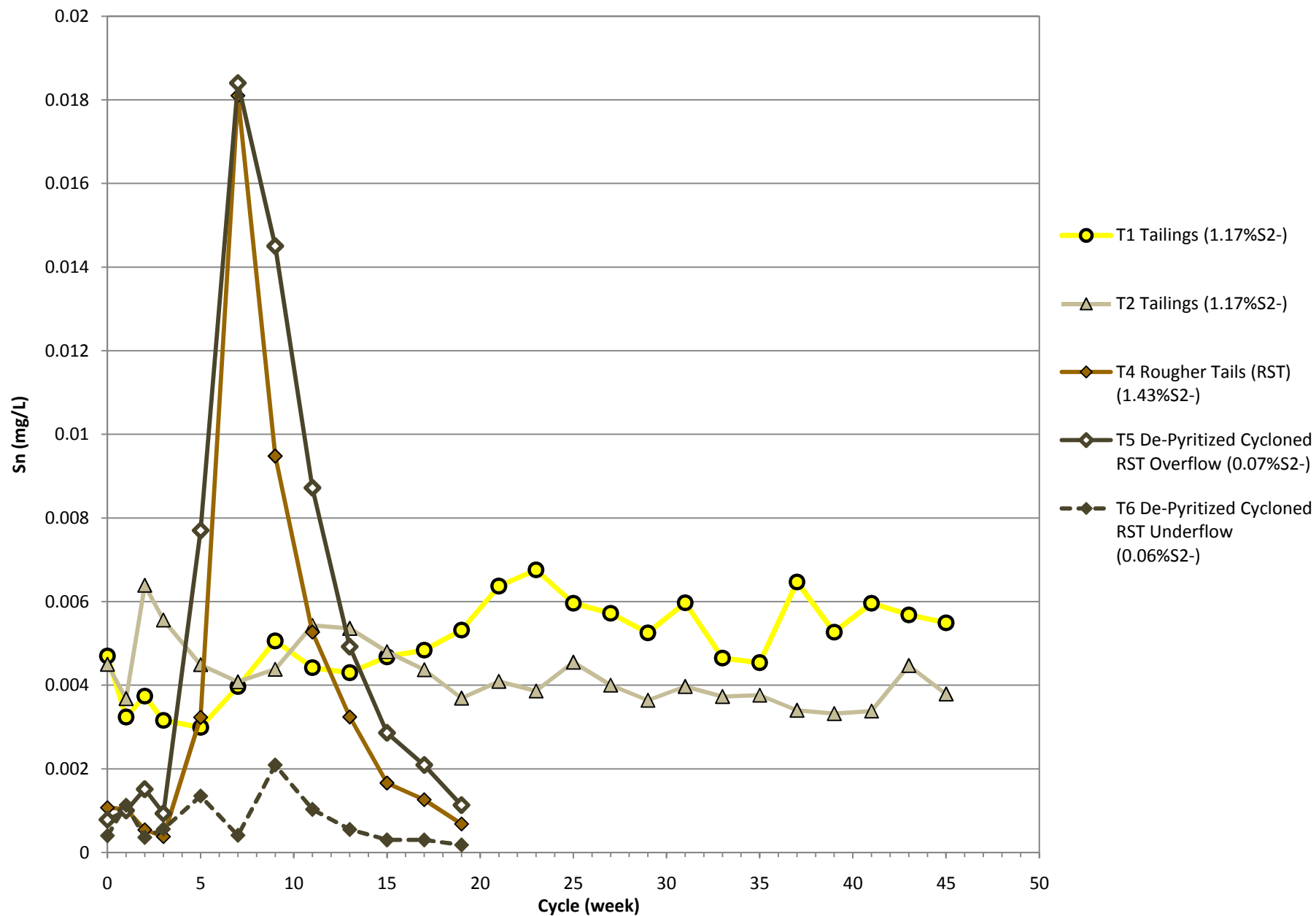
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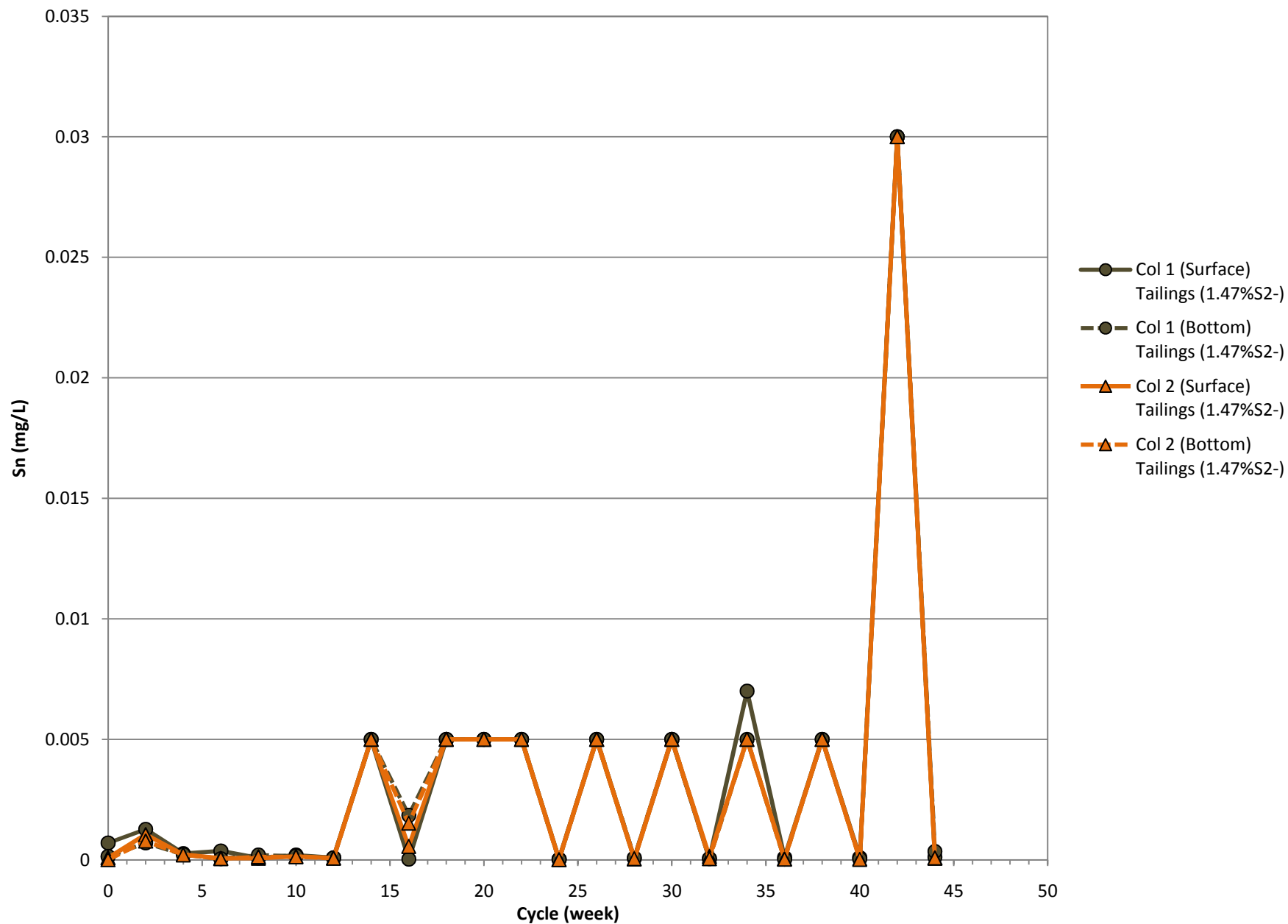
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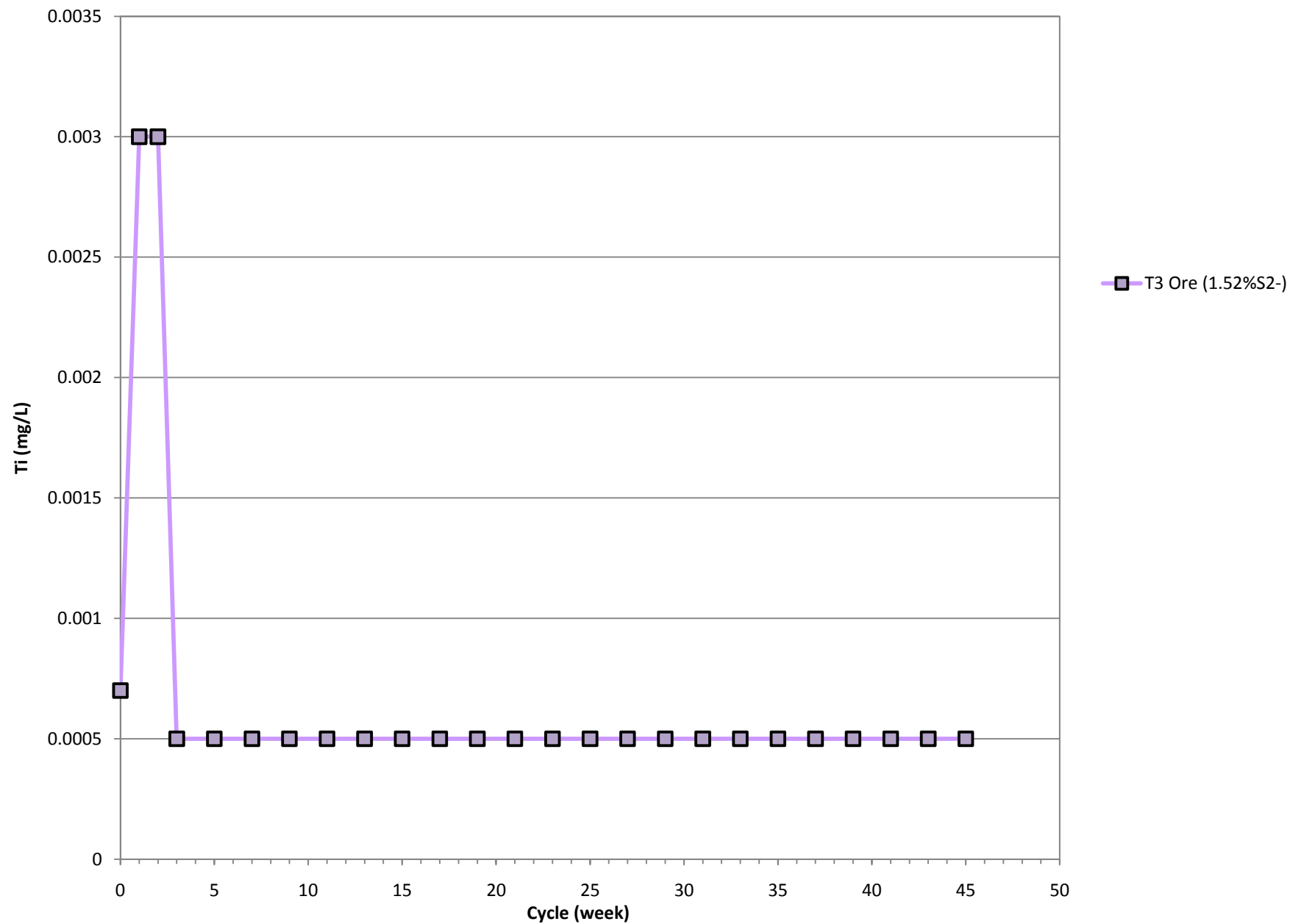
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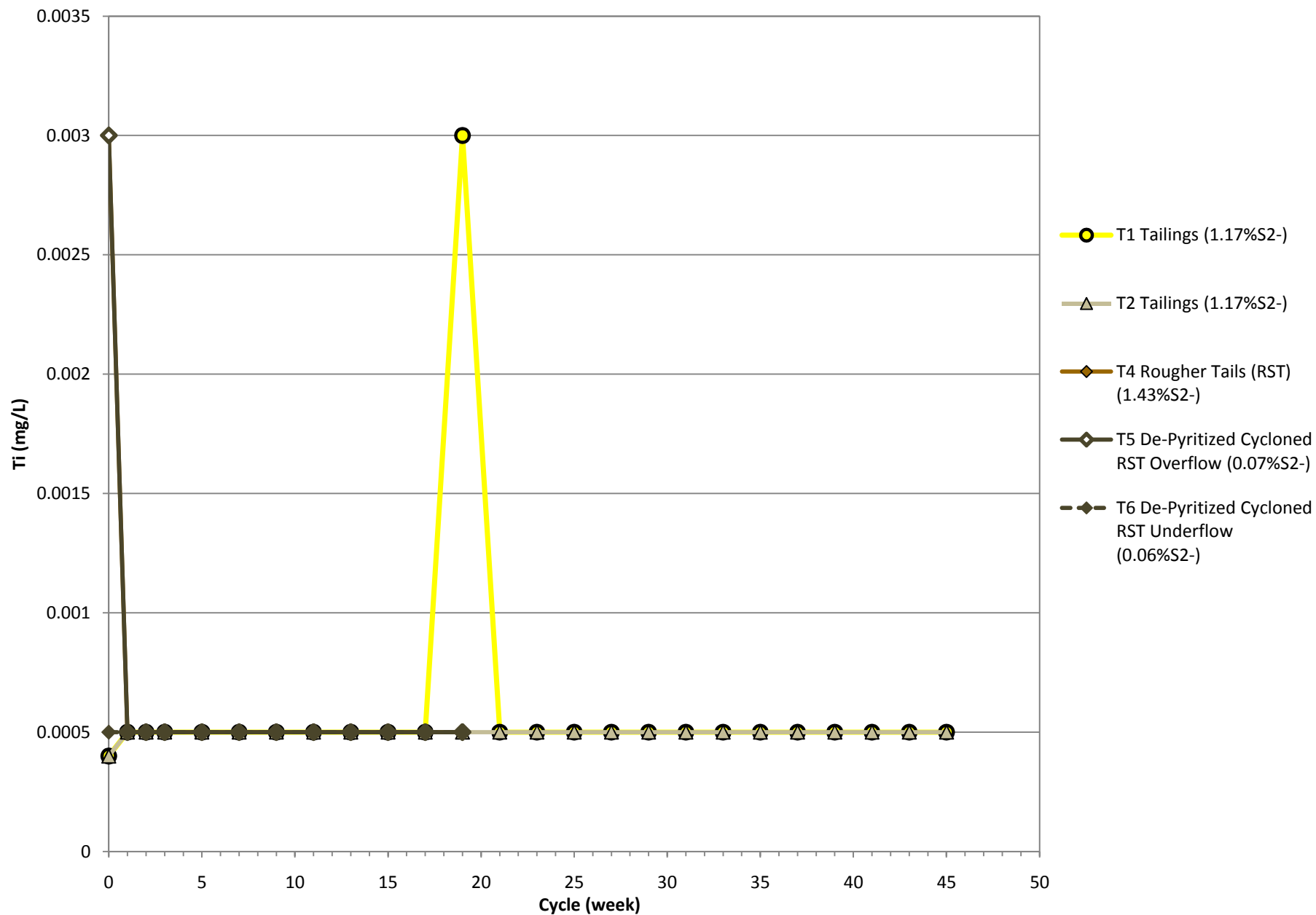
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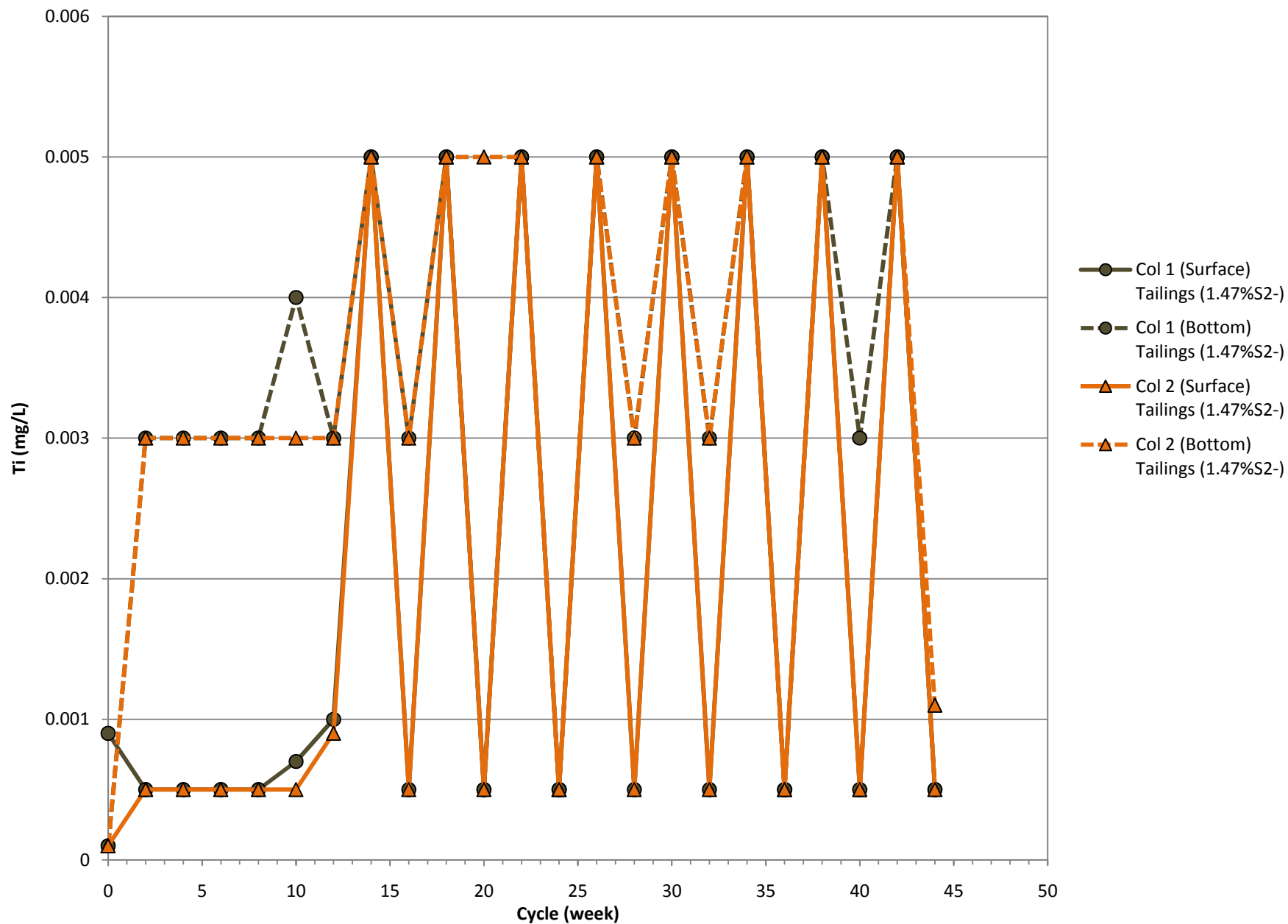
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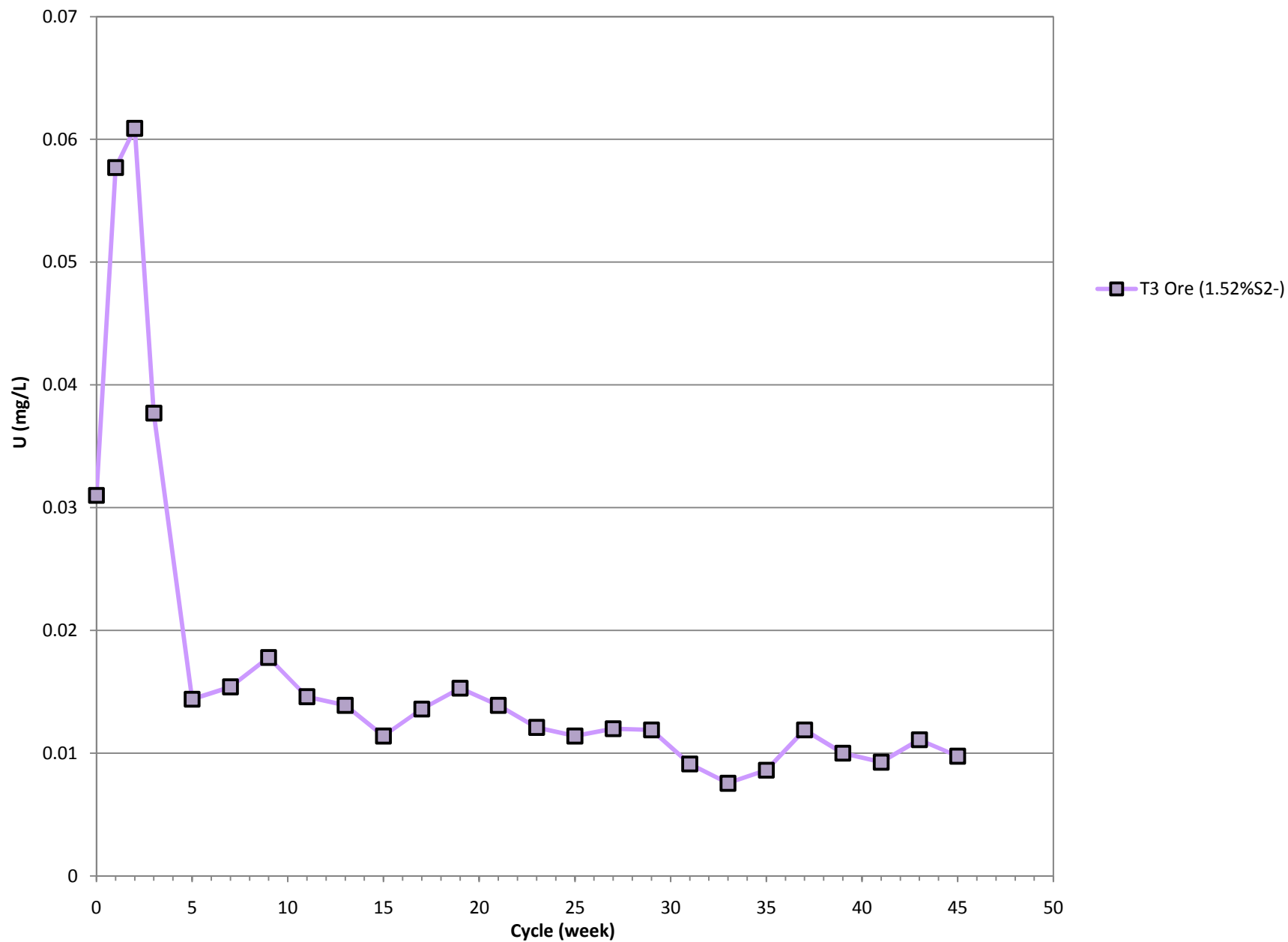
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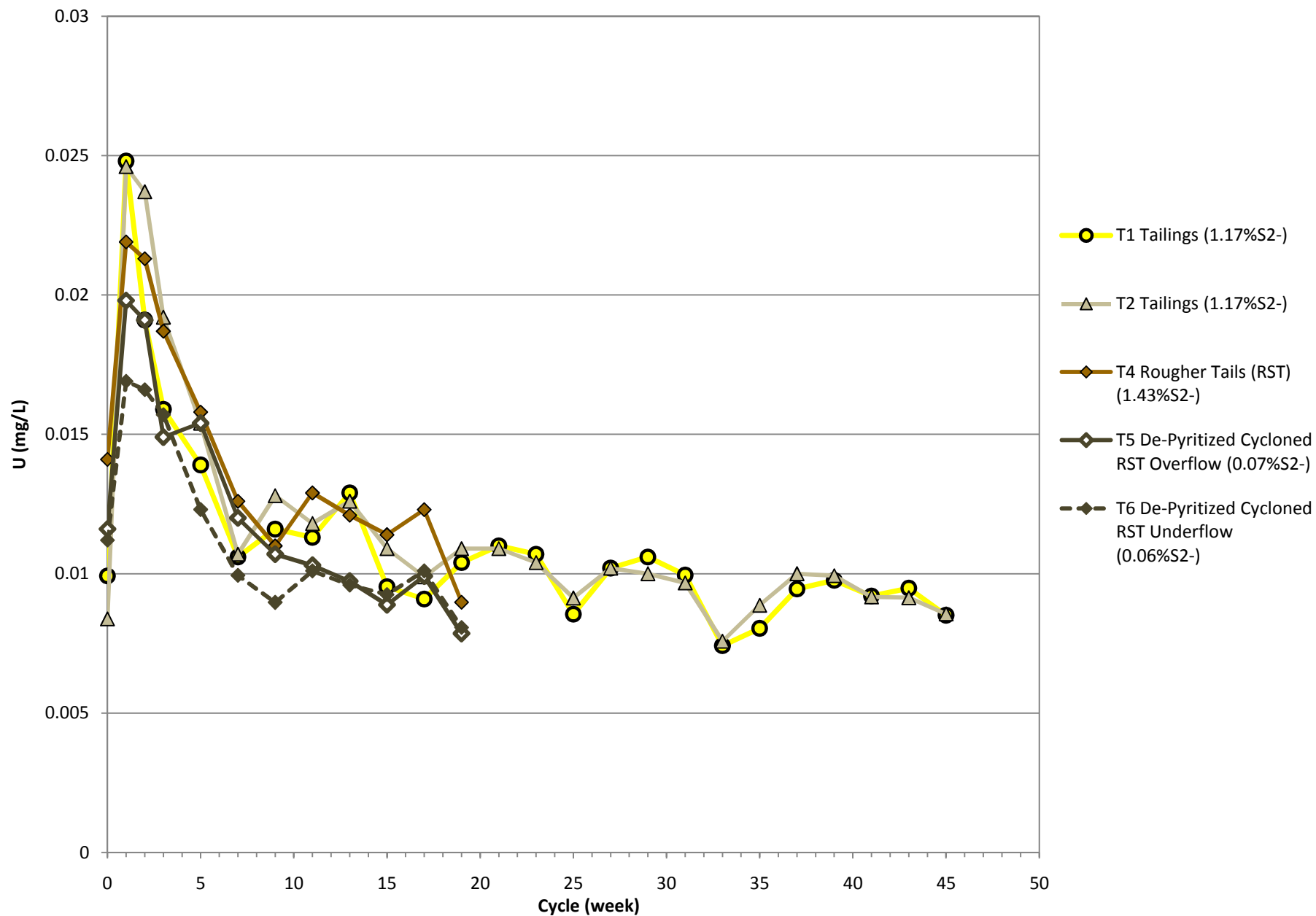
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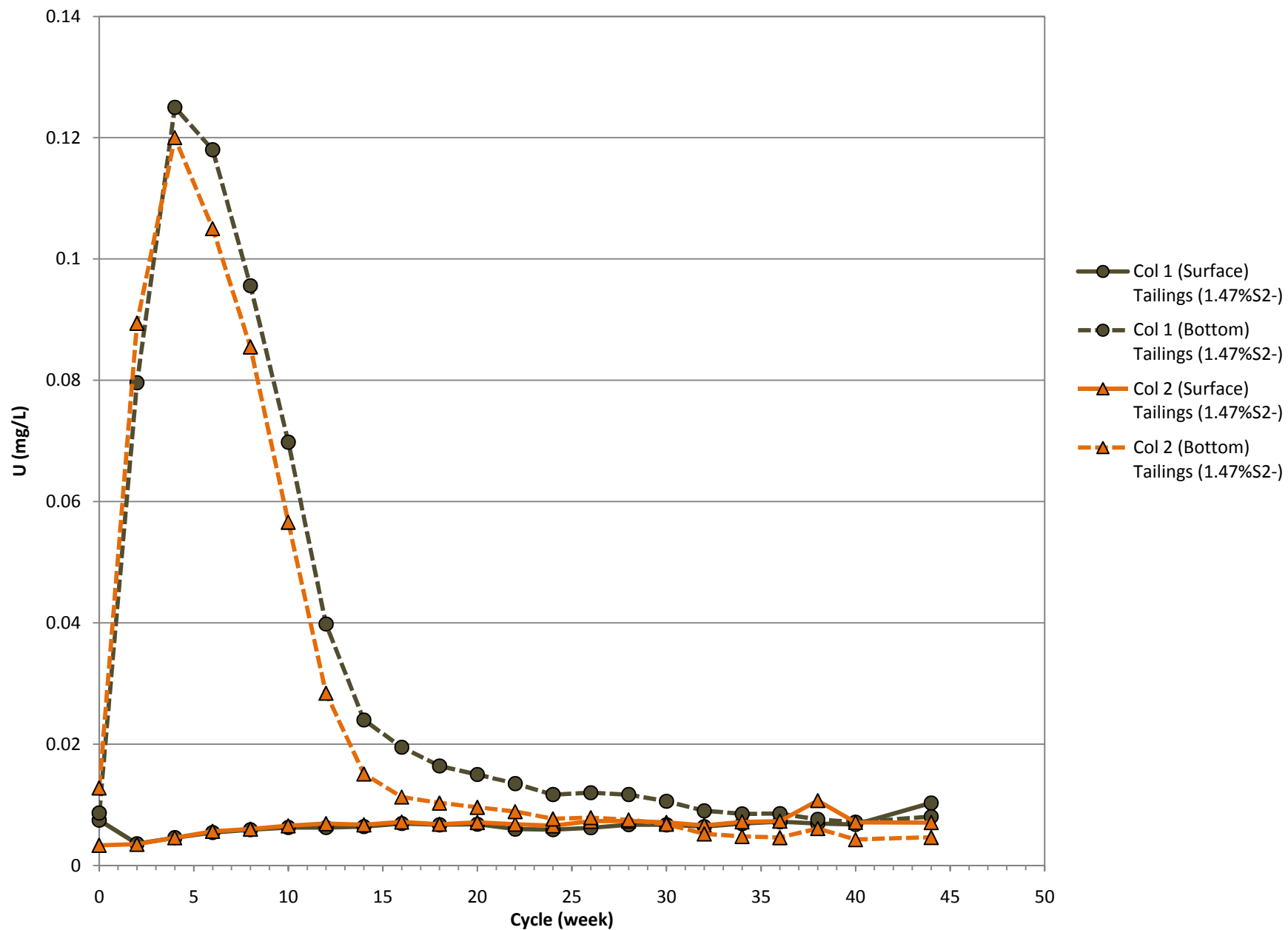
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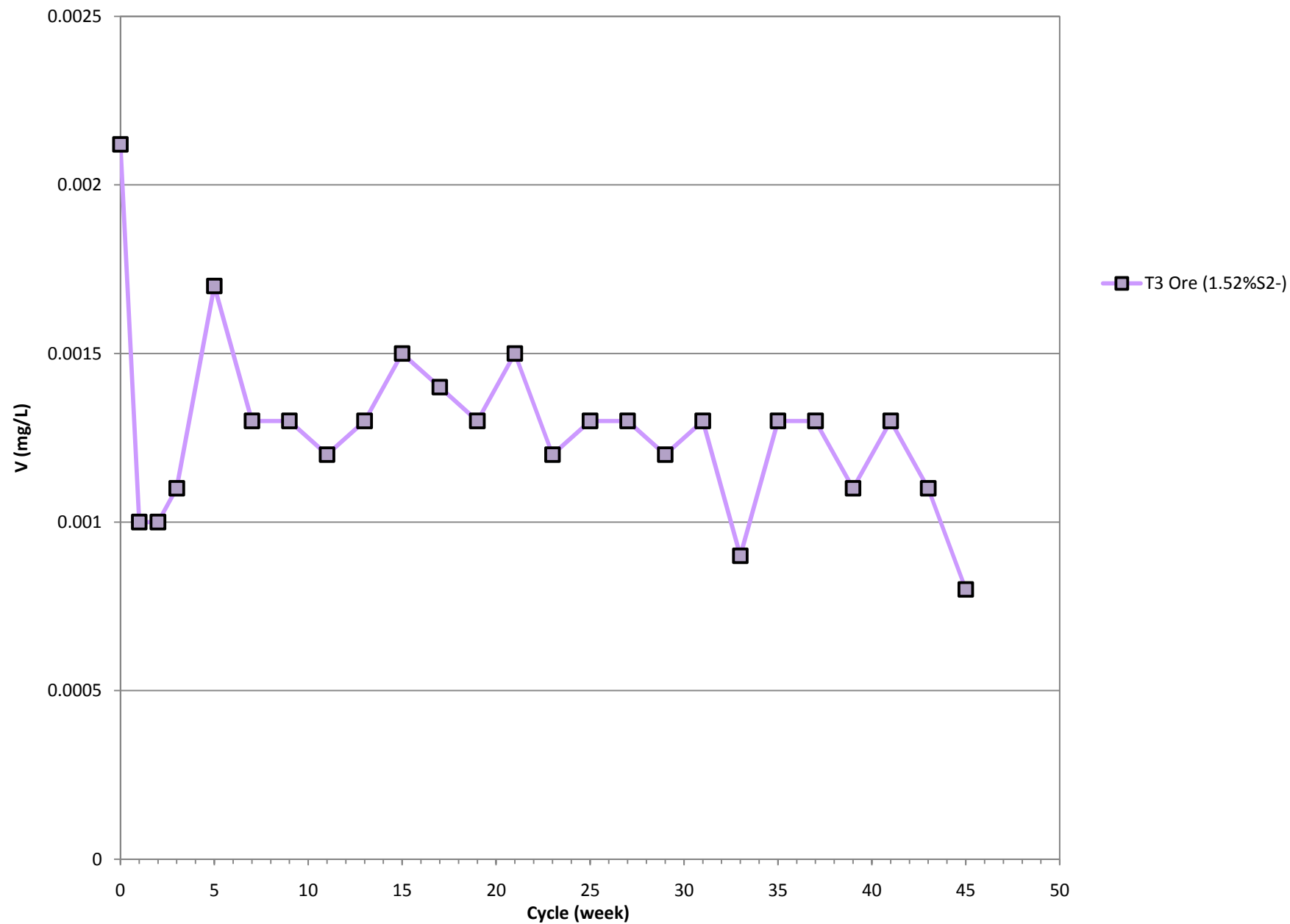
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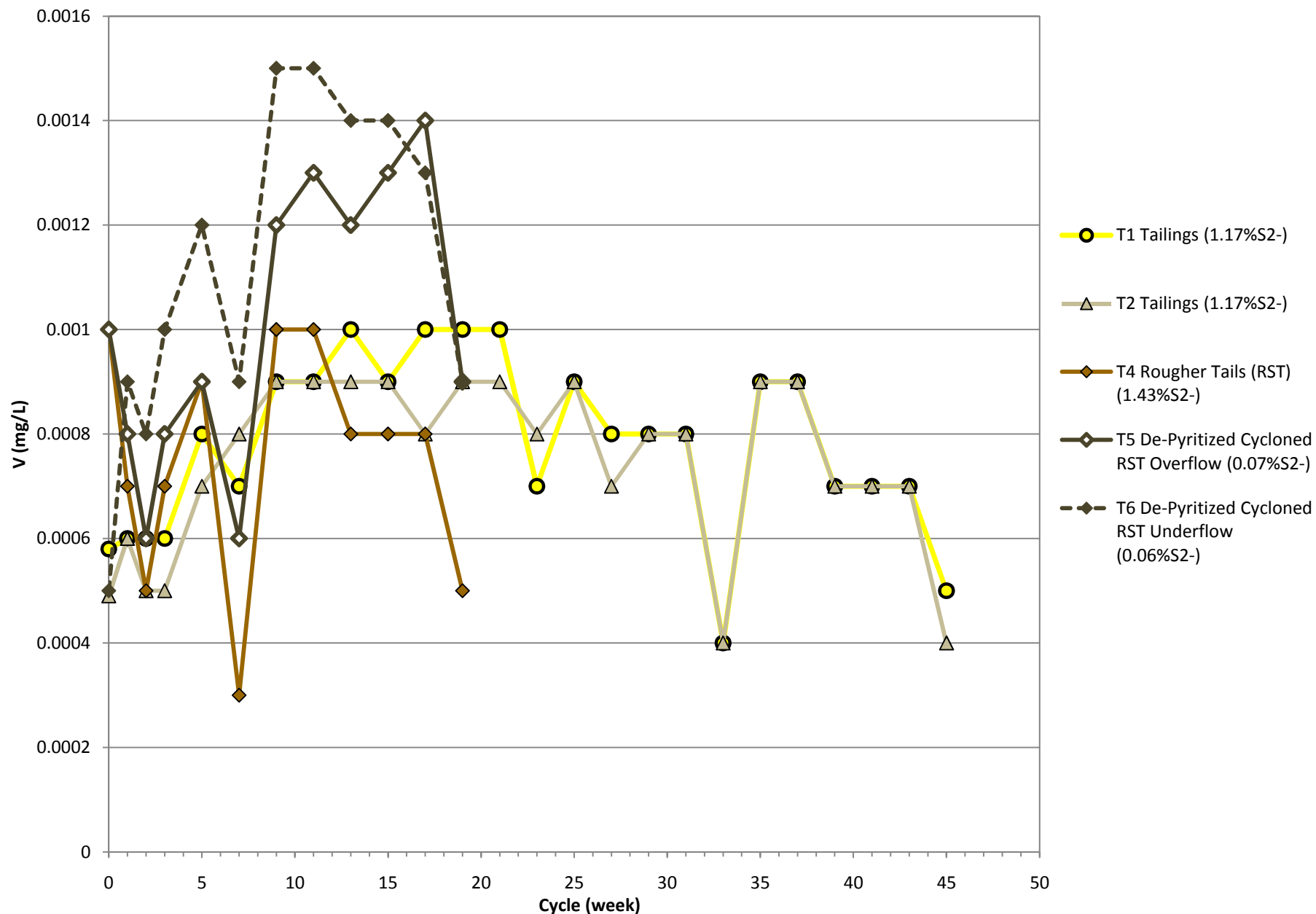
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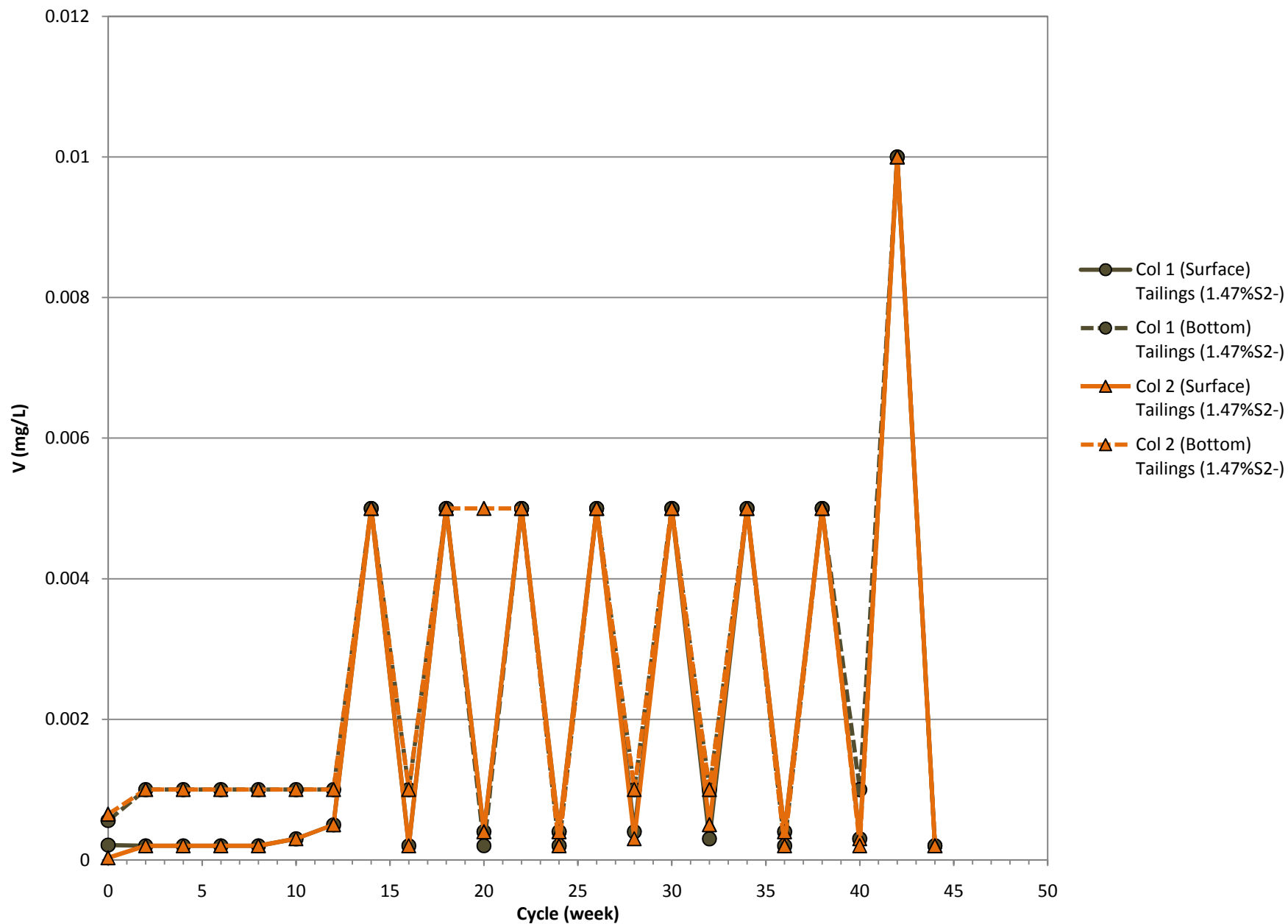
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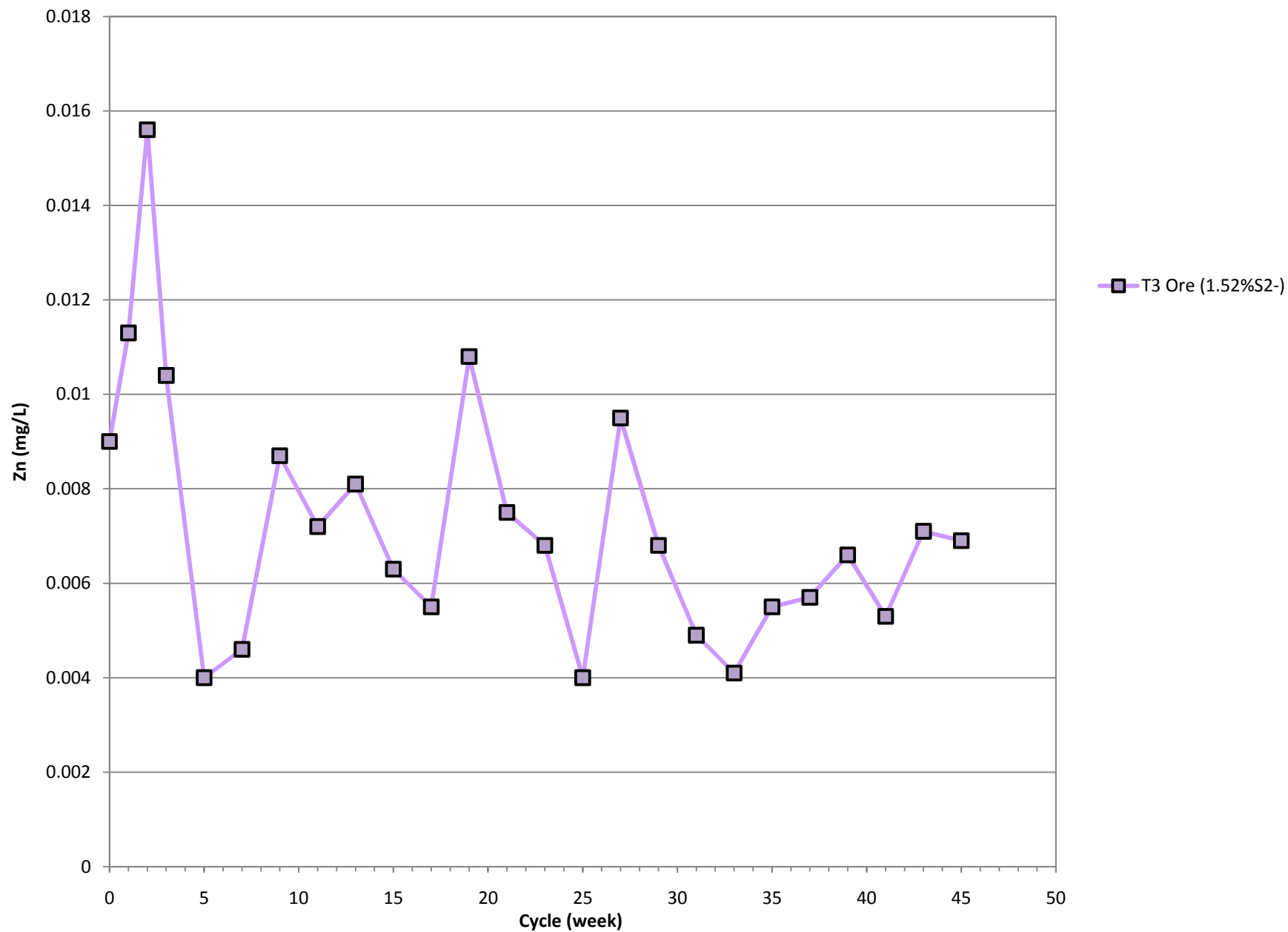
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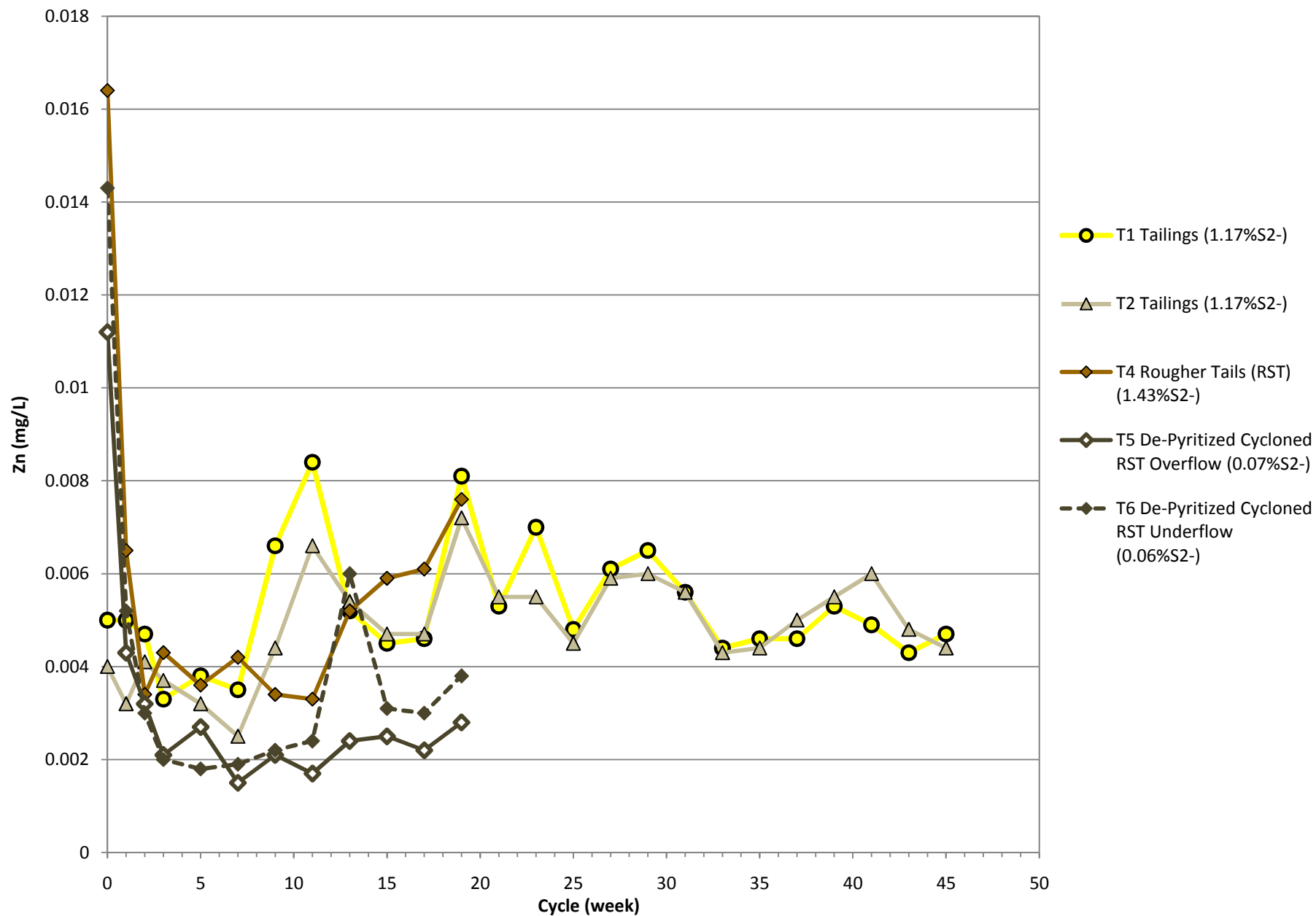
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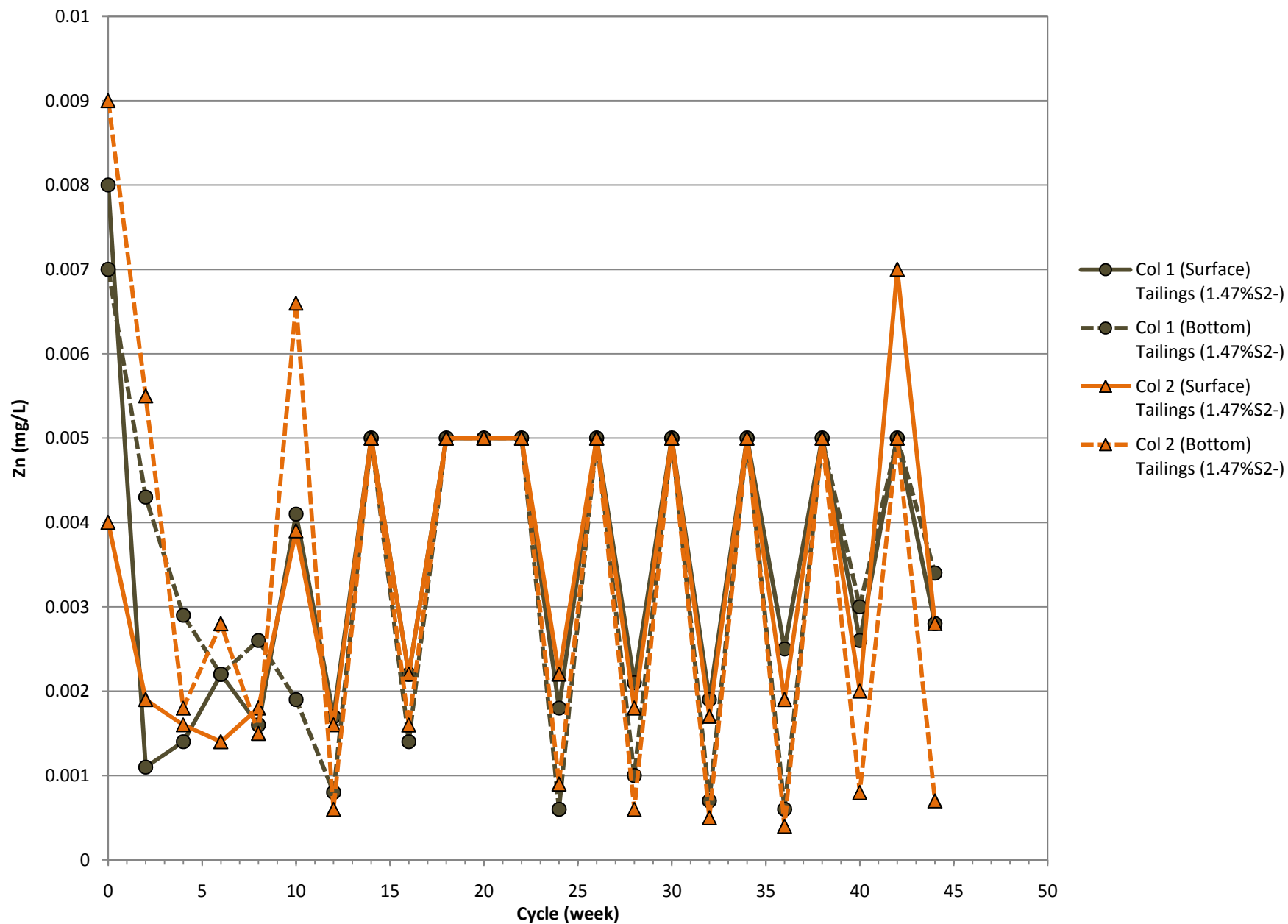
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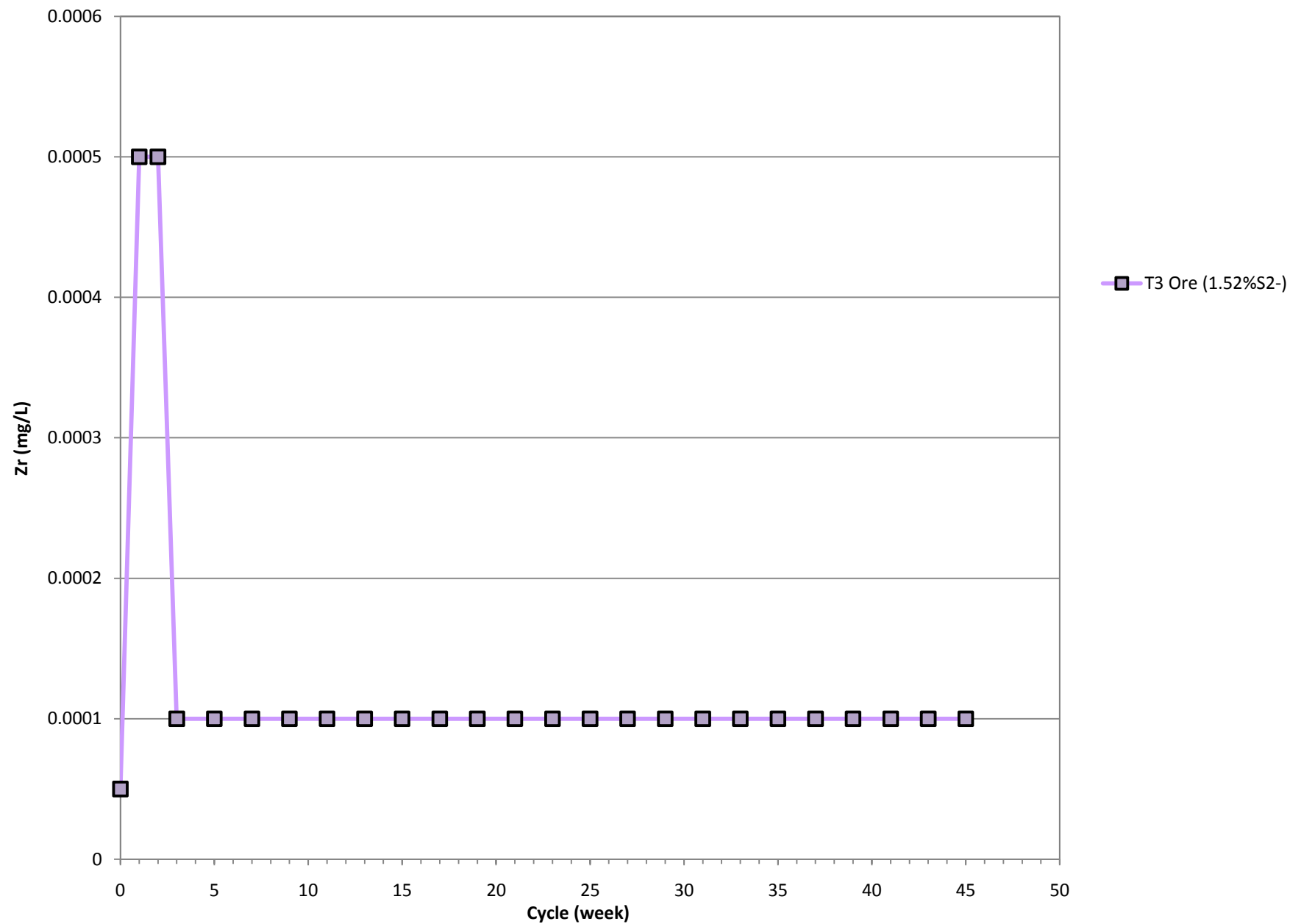
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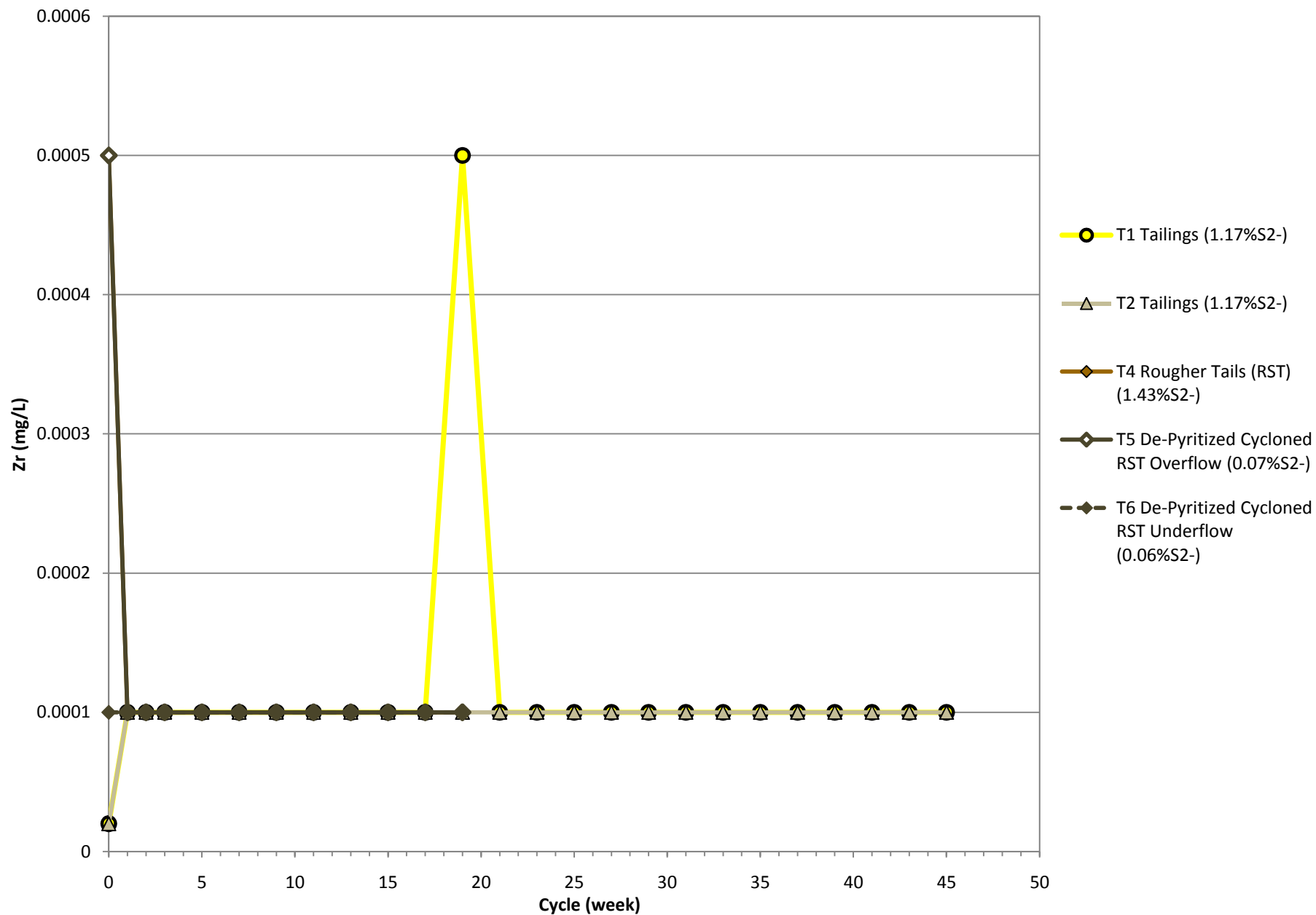
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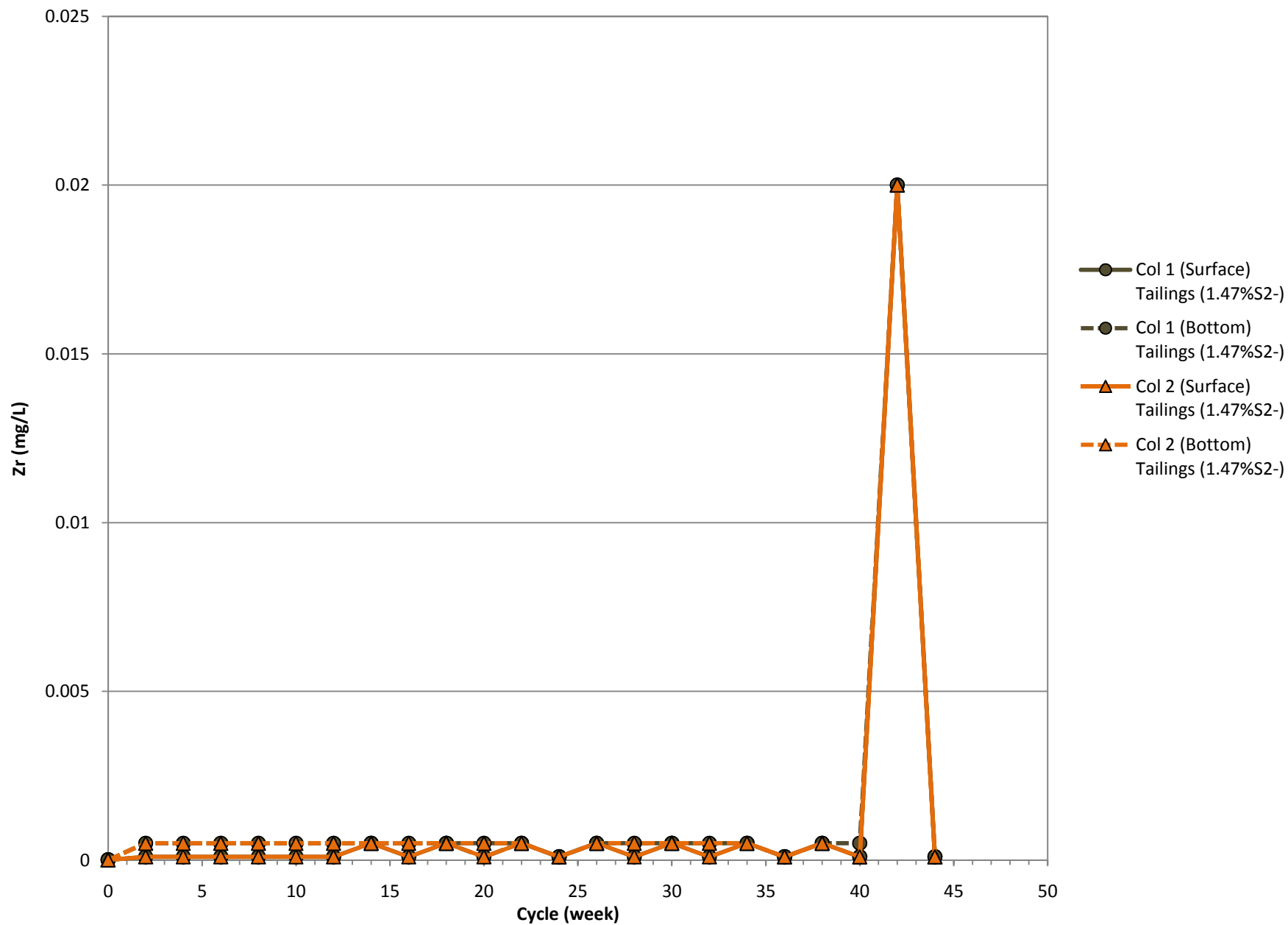
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Rock\WR Test program\Kinetic Test Program\Kinetic

[illegible]

July 26/10 Cr 0.0007. Repeat = 0.001, confirmed
Aug 23/10 Cr 0.0006. Repeat = 0.001, confirmed

July 26/10 Fe 0.012. Repeat = 0.012. Suspect contamination
July 26/10 Cr 0.0007. Repeat = 0.0008. Confirmed.
Aug 23/10 Cr 0.0005. Repeat = 0.0008, confirmed.

Sample & Raw Data (RST)										CONFIDENTIAL										DRAFT																																																																																																																																																																																																																																																	
Date	Cycle	Flow ml/min	pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L (pH 4.5)	Alkalinity mgCaCO3/L (pH 8.3)	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness CaCO3 (mg/L)	Al (mg/L)	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	B (mg/L)	Cd (mg/L)	Ca (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)	Pb (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Hg (ug/L)	Mo (mg/L)	Ni (mg/L)	P (mg/L)	K (mg/L)	Se (mg/L)	Si (mg/L)	Ag (mg/L)	Na (mg/L)	Sr (mg/L)	S (mg/L)	Ti (mg/L)	Sn (mg/L)	Zn (mg/L)	Zr (mg/L)	Maxcam ID	Job #	Major Anions	Major Cations	Diff	Dff %																																																																																																																																																																																																																				
19-Jul-10	0	750	500	7.50	321	958	#N/A	7.0	61.8	410	29	4.04	0.009	0.024	0.011	0.0011	0.0541	-0.00005	-0.00003	-0.3	0.00037	120	-0.0005	0.0005	0.0004	0.0005	0.000188	0.019	26.8	0.225	-0.05	0.1	0.0071	0.054	32	0.0041	3.23	0.000025	23.2	10	150	0.00014	0.00107	-0.0003	0.0141	-0.0001	0.0065	-0.0005	B061851	10.81	10.81	20.25	-0.56	-1.2%																																																																																																																																																																																																															
26-Jul-10	1	500	425	7.77	354	998	#N/A	5.1	83.0	115	23	2.61	0.031	0.011	0.0093	0.0922	-0.00001	-0.00003	-0.00002	61	0.0007	0.000255	0.00043	0.0001	0.000188	0.019	14.6	0.133	-0.01	0.0561	0.00126	0.054	17	0.0036	4.43	0.000005	11.9	6.6	40	0.000066	0.00104	-0.0005	0.0219	0.0007	0.0164	-0.0001	B065032	4.26	5.35	1.09	-11.3%																																																																																																																																																																																																																		
2-Aug-10	2	400	375	7.99	372	1000	#N/A	5.3	90.3	100	21	0.27	0.015	0.0094	0.0063	0.0948	-0.00001	-0.00005	-0.05	0.000214	25.5	-0.0001	0.000253	0.00016	0.000187	0.019	11.2	0.123	-0.01	0.0595	0.001	0.0029	8.13	0.0028	3.8	0.000051	0.00054	-0.0005	0.0213	0.0005	0.0034	-0.0001	B070531	4.02	3.95	-0.07	-0.9%																																																																																																																																																																																																																						
9-Aug-10	3	500	445	7.99	362	375	#N/A	5.3	98.7	118	-0.5	2.6	0.168	0.0269	0.00941	0.00058	0.0726	-0.00001	-0.000005	-0.05	0.000229	46.4	-0.0001	0.000304	0.00056	0.0001	0.000229	0.0157	12.6	0.147	-0.01	0.0494	0.00113	0.013	12.5	0.0029	4.4	0.000005	6	6.1	40	0.000052	0.00038	-0.0005	0.0187	0.0007	0.0043	-0.0001	B072492	4.56	4.07	-0.48	-5.6%																																																																																																																																																																																																																
16-Aug-10	4	500	430	8.00	315	278	#N/A	3.8	80.0	77	-0.5	1.69	0.101	0.0298	0.00816	0.00067	0.082	-0.00001	-0.000005	-0.05	0.000221	27.8	0.0006	0.000121	0.00167	0.0007	0.000307	0.0095	7.74	0.076	-0.01	0.0536	0.00048	0.009	8.3	0.00171	3.04	0.000005	3.02	4.39	22	0.000037	0.00323	-0.0005	0.0158	0.0009	0.0036	-0.0001	B078573	2.52	2.47	-0.05	-1.8%																																																																																																																																																																																																																
23-Aug-10	5	500	430	7.86	356	249	#N/A	3.7	76.4	44	-0.5	1.69	0.101	0.0298	0.00816	0.00067	0.082	-0.00001	-0.000005	-0.05	0.000221	27.8	0.0006	0.000121	0.00167	0.0007	0.000307	0.0095	7.74	0.076	-0.01	0.0536	0.00048	0.009	8.3	0.00171	3.04	0.000005	3.02	4.39	22	0.000037	0.00323	-0.0005	0.0158	0.0009	0.0036	-0.0001	B078573	2.52	2.47	-0.05	-1.8%																																																																																																																																																																																																																
30-Aug-10	6	500	430	7.86	356	249	#N/A	3.7	76.4	44	-0.5	1.69	0.101	0.0298	0.00816	0.00067	0.082	-0.00001	-0.000005	-0.05	0.000221	27.8	0.0006	0.000121	0.00167	0.0007	0.000307	0.0095	7.74	0.076	-0.01	0.0536	0.00048	0.009	8.3	0.00171	3.04	0.000005	3.02	4.39	22	0.000037	0.00323	-0.0005	0.0158	0.0009	0.0036	-0.0001	B078573	2.52	2.47	-0.05	-1.8%																																																																																																																																																																																																																
6-Sep-10	7	500	485	7.77	383	238	#N/A	5.8	94.5	41	-0.5	1.27	99.3	0.027	0.0683	0.00053	0.107	-0.00001	-0.000005	-0.05	0.000351	27.3	-0.0001	0.000143	0.00033	0.0004	0.00357	0.0083	7.58	0.105	-0.01	0.0536	0.00056	0.0006	4.96	0.00111	3.77	0.000007	2.29	4.04	14	0.000037	0.0181	-0.0005	0.0126	0.0003	0.0042	-0.0001	B083922	2.80	2.36	-0.44	-8.6%																																																																																																																																																																																																																
13-Sep-10	8	500	455	7.77	348	187	#N/A	4.3	78.1	27	-0.5	1.06	86.6	0.0316	0.00664	0.00052	0.111	-0.00001	0.000007	-0.05	0.000249	25.1	0.0001	0.000094	0.00088	0.002	0.000325	0.0068	5.82	0.0762	-0.01	0.0544	0.00038	0.007	5.51	0.00123	3.78	-0.000005	1.62	3.3	11	0.000034	0.00948	-0.0005	0.011	0.001	0.0034	-0.0001	B091561	2.13	2.02	-0.11	-2.7%																																																																																																																																																																																																																
20-Sep-10	9	500	450	7.90	353	162	#N/A	4.0	79.0	27	-0.5	1.06	86.6	0.0316	0.00664	0.00052	0.111	-0.00001	0.000007	-0.05	0.000249	25.1	0.0001	0.000094	0.00088	0.002	0.000325	0.0068	5.82	0.0762	-0.01	0.0544	0.00038	0.007	5.51	0.00123	3.78	-0.000005	1.62	3.3	11	0.000034	0.00948	-0.0005	0.011	0.001	0.0034	-0.0001	B091561	2.13	2.02	-0.11	-2.7%																																																																																																																																																																																																																
27-Sep-10	10	500	450	7.90	353	162	#N/A	4.0	79.0	27	-0.5	1.06	86.6	0.0316	0.00664	0.00052	0.111	-0.00001	0.000007	-0.05	0.000249	25.1	0.0001	0.000094	0.00088	0.002	0.000325	0.0068	5.82	0.0762	-0.01	0.0544	0.00038	0.007	5.51	0.00123	3.78	-0.000005	1.62	3.3	11	0.000034	0.00948	-0.0005	0.011	0.001	0.0034	-0.0001	B091561	2.13	2.02	-0.11	-2.7%																																																																																																																																																																																																																
4-Oct-10	11	500	455	7.85	340	203	#N/A	3.4	83.9	31	-0.5	0.99	90.8	0.0351	0.0071	0.00061	0.128	-0.00001	-0.000005	-0.05	0.000315	26	0.0002	0.000078	0.00055	0.002	0.000371	0.007	6.3	0.0848	-0.01	0.0617	0.00034	0.006	5.93	0.00124	4.05	-0.000005	1.66	3.58	11	0.000034	0.00527	-0.0005	0.0129	0.001	0.0033	-0.0001	B096721	2.36	2.12	-0.24	-5.4%																																																																																																																																																																																																																
11-Oct-10	12	500	460	7.88	306	202	#N/A	3.3	91.0	28	-0.5	0.99	88.8	0.0256	0.00699	0.00045	0.15	-0.00001	-0.000005	-0.05	0.000454	25.5	-0.0001	0.000107	0.00085	0.001	0.000433	0.0066	6.09	0.0981	-0.01	0.06	0.00036	0.003	5.19	0.00114	3.46	-0.000005	1.35	3.47	-10	0.000031	0.00324	-0.0005	0.0121	0.0008	0.0052	-0.0001	B0A4166	2.46	2.30	-0.41	-9.2%																																																																																																																																																																																																																
18-Oct-10	13	500	470	7.91	341	201	#N/A	3.3	91.7	28	-0.5	0.99	88.8	0.0256	0.00699	0.00045	0.15	-0.00001	-0.000005	-0.05	0.000454	25.5	-0.0001	0.000107	0.00085	0.001	0.000433	0.0066	6.09	0.0981	-0.01	0.06	0.00036	0.003	5.19	0.00114	3.46	-0.000005	1.35	3.47	-10	0.000031	0.00324	-0.0005	0.0121	0.0008	0.0052	-0.0001	B0A4166	2.46	2.30	-0.41	-9.2%																																																																																																																																																																																																																
25-Oct-10	14	500	470	7.91	341	201	#N/A	3.3	91.7	28	-0.5	0.99	88.8	0.0256	0.00699	0.00045	0.15	-0.00001	-0.000005	-0.05	0.000454	25.5	-0.0001	0.000107	0.00085	0.001	0.000433	0.0066	6.09	0.0981	-0.01	0.06	0.00036	0.003	5.19	0.00114	3.46	-0.000005	1.35	3.47	-10	0.000031	0.00324	-0.0005	0.0121	0.0008	0.0052	-0.0001	B0A4166	2.46	2.30	-0.41	-9.2%																																																																																																																																																																																																																
1-Nov-10	15	500	470	8.00	387	201	#N/A	2.8	94.0	20	-0.5	0.93	85.8	0.0251	0.00587	0.00049	0.157	-0.00001	-0.000005	-0.05	0.000504	24.3	0.0003	0.000121	0.00169	0.003	0.000441	0.0063	6.12	0.107	-0.01	0.0527	0.00059	0.004	5.05	0.00105	3.79	-0.000005	1.33	3.33	-10	0.000031	0.00166	-0.0005	0.0114	0.0008	0.0059	-0.0001	B0A4167	2.33	1.98	-0.35	-8.2%																																																																																																																																																																																																																
8-Nov-10	16	500	445	7.93	364	199	#N/A	2.6	85.3	21	-0.5	1.06	99.8	0.0302	0.0068	0.0005	0.176	-0.00001	-0.000005	-0.05	0.000609	29	0.0001	0.000103	0.00074	0.002	0.000452	0.0062	6.62	0.118	-0.01	0.0564	0.00037	0.004	5.28	0.00114	4.32	-0.000005	1.31	3.54	-10	0.000035	0.00126	-0.0005	0.0123	0.0008	0.0061	-0.0001	Y62012	B0B4311	2.38	2.26	-0.11	-2.4%																																																																																																																																																																																																															
15-Nov-10	17	500	450	7.99	370	210	#N/A	3.4	92.7	23	-0.5	1.06	99.8	0.0302	0.0068	0.0005	0.176	-0.00001	-0.000005	-0.05	0.000609	29	0.0001	0.000103	0.00074	0.002	0.000452	0.0062	6.62	0.118	-0.01	0.0564	0.00037	0.004	5.28	0.00114	4.32	-0.000005	1.31	3.54	-10	0.000035	0.00126	-0.0005	0.0123	0.0008	0.0061	-0.0001	Y62012	B0B4311	2.38	2.26	-0.11	-2.4%																																																																																																																																																																																																															
22-Nov-10	18	500	490	7.77	353	187	#N/A	4.9	90.7	187	-0.5	0.77	78.4	0.0225	0.00566	0.00037	0.157	-0.00001	-0.000005	-0.05	0.000587	23	-0.0001	0.000091	0.00095	0.002	0.000882	0.0046	5.08	0.108	-0.01	0.0368	0.00035	-0.002	3.71	0.00089	3.01	0.000005	0.83	2.91	-10	0.000031	0.00068	-0.0005	0.00988	0.0005	0.0076	-0.0001	Y84117	B0B8096																																																																																																																																																																																																																			
29-Nov-10	19	500	490	7.81	337	179	#N/A	4.4	88.4	20	-0.5	0.77	78.4	0.0225	0.00566	0.00037	0.157	-0.00001	-0.000005	-0.05	0.000587	23	-0.0001	0.000091	0.00095	0.002	0.000882	0.0046	5.08	0.108	-0.01	0.0368	0.00035	-0.002	3.71	0.00089	3.01	0.000005	0.83	2.91	-10	0.000031	0.00068	-0.0005	0.00988	0.0005	0.0076	-0.0001	Y84117	B0B8096																																																																																																																																																																																																																			
6-Dec-10	20	500	445	7.69	337	172	#N/A	4.2	80.6																																																																																																																																																																																																																																																												</

Aug 23/10 Cr 0.0006. Repeat = 0.0008, confirmed.

[illegible]

Aug 23/10 Cr 0.0006. Repeat = 0.0008, confirmed.
Sept 6/10 F 0.02. Repeat = 0.99

Sample De-Pyridized Cycloned RST Underflow																																																																																																																																																																																																																																																																																																																									
CONFIDENTIAL DRAFT																																																																																																																																																																																																																																																																																																																									
Date	Cycle	Volume Input	Volume Output	pH	ORP	Cond.	Acidity (mgCaCO3/L pH 4.5)	Acidity (mgCaCO3/L pH 8.3)	Alkalinity (mgCaCO3/L)	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	P	K	Se	Si	Ag	Na	Sr	S	Ti	Sn	Ti	U	V	Zn	Zr	Maxcam ID	Job #	Major Anions	Major Cations	Diff	Diff %																																																																																																																																																																																																																																																																			
19-Jul-10	0	750	490	7.46	372	496	#N/A	5.5	58.1	166	8.1	2.22	187	0.0283	0.00693	0.00123	0.0508	-0.00001	-0.000005	-0.05	0.000165	36.4	-0.0001	0.000221	0.00574	0.008	0.000118	0.0169	11.2	0.18	-0.01	0.129	0.0038	0.083	17.5	0.00091	3.04	0.000019	11.2	6.3	57	0.000047	0.0004	-0.0005	0.0112	0.0005	0.0143	0.0043	-0.0001		B061851	2.94	4.81	-0.15	-1.5%																																																																																																																																																																																																																																																																		
26-Jun-10	1	500	435	7.81	342	290	#N/A	4.6	97.4	188	8.6	1.42	123	0.0346	0.00951	0.00125	0.143	-0.00001	-0.000005	-0.05	0.000168	36.1	0.0007	0.000241	0.00274	0.002	0.000563	0.0133	8.1	0.128	-0.01	0.0948	0.00197	0.023	10.4	0.00059	5.11	-0.000005	6.33	4.2	20	0.000031	0.00113	-0.0005	0.0169	0.0009	0.0052	-0.0001		B065032	4.97	3.11	0.27	-4.5%																																																																																																																																																																																																																																																																			
2-Aug-10	2	400	465	8.09	399	29	#N/A	2.9	105.9	107	8.08	1.11	0.0379	0.00697	0.00076	0.134	-0.00001	-0.000005	-0.05	0.00012	39.2	-0.0001	0.000151	0.00145	0.007	0.000439	0.0149	7.43	0.149	-0.01	0.0548	0.00025	0.061	4.05	16	0.000029	0.00018	-0.0005	0.0166	0.0009	0.003	-0.0001		B070531	2.76	2.70	-0.06	-1.2%																																																																																																																																																																																																																																																																									
9-Aug-10	3	500	445	8.01	366	224	#N/A	4.4	94.5	32	<-0.5	1	95.8	0.0297	0.00581	0.0008	0.131	-0.00001	-0.000005	-0.05	0.000081	27.3	-0.0001	0.000107	0.00221	0.002	0.000025	0.0086	6.71	0.109	-0.01	0.0398	0.00065	0.015	6.64	0.00037	3.66	-0.000005	2.56	3.48	11	0.000023	0.00056	-0.0005	0.0157	0.001	0.002	-0.0001		B072492	2.59	2.28	-0.32	-6.6%																																																																																																																																																																																																																																																																			
16-Aug-10	4	500	440	8.08	337	199	#N/A	3.4	88.1	18	>0.5	0.87	74.6	0.0399	0.00487	0.00082	0.144	-0.00001	-0.000005	-0.05	0.000092	27.2	0.0004	0.000069	0.00274	0.007	0.000106	0.0062	5.27	0.0784	-0.01	0.0306	0.00042	0.011	5.69	0.00031	2.96	-0.000005	1.66	2.88	-10	0.000019	0.00135	-0.0005	0.0123	0.0012	0.0018	-0.0001		B076573	2.06	1.78	-0.28	-7.4%																																																																																																																																																																																																																																																																			
23-Aug-10	5	500	435	7.94	351	180	#N/A	3.0	82.6	18	>0.5	0.87	74.6	0.0399	0.00487	0.00082	0.144	-0.00001	-0.000005	-0.05	0.000092	27.2	0.0004	0.000069	0.00274	0.007	0.000106	0.0062	5.27	0.0784	-0.01	0.0306	0.00042	0.011	5.69	0.00031	2.96	-0.000005	1.66	2.88	-10	0.000019	0.00135	-0.0005	0.0123	0.0012	0.0018	-0.0001		B076573	2.06	1.78	-0.28	-7.4%																																																																																																																																																																																																																																																																			
30-Aug-10	6	500	455	7.78	376	177	#N/A	5.4	86.1	17	-0.5	0.74	75.5	0.0428	0.00422	0.00087	0.196	-0.00001	0.000006	-0.05	0.000092	22	0.0006	0.000079	0.00134	0.012	0.000091	0.0036	5.06	0.152	-0.01	0.0252	0.00044	0.006	5.23	0.00023	3.6	0.000005	1.39	2.82	-10	0.000021	0.0004	-0.0005	0.00994	0.0009	0.0019	-0.0001		B076573	2.06	1.78	-0.28	-7.4%																																																																																																																																																																																																																																																																			
6-Sep-10	7	500	455	7.78	376	177	#N/A	5.4	86.1	17	-0.5	0.74	75.5	0.0428	0.00422	0.00087	0.196	-0.00001	0.000006	-0.05	0.000092	22	0.0006	0.000079	0.00134	0.012	0.000091	0.0036	5.06	0.152	-0.01	0.0252	0.00044	0.006	5.23	0.00023	3.6	0.000005	1.39	2.82	-10	0.000021	0.0004	-0.0005	0.00994	0.0009	0.0019	-0.0001		B076573	2.06	1.78	-0.28	-7.4%																																																																																																																																																																																																																																																																			
13-Sep-10	8	500	455	7.77	352	142	#N/A	3.9	77.6	12	-0.5	0.72	71.2	0.0542	0.00383	0.00072	0.212	-0.00001	0.000005	-0.05	0.000128	21.4	0.0001	0.000049	0.00266	0.013	0.000151	0.0047	4.34	0.0821	-0.01	0.0224	0.00031	0.009	4.39	0.00026	3.6	-0.000005	1.01	2.39	-10	0.000022	0.00209	-0.0005	0.00897	0.0015	0.0022	-0.0001		B091561	1.80	1.64	-0.16	-4.7%																																																																																																																																																																																																																																																																			
20-Sep-10	9	500	445	7.94	345	127	#N/A	3.7	76.2	12	-0.5	0.72	71.2	0.0542	0.00383	0.00072	0.212	-0.00001	0.000005	-0.05	0.000128	21.4	0.0001	0.000049	0.00266	0.013	0.000151	0.0047	4.34	0.0821	-0.01	0.0224	0.00031	0.009	4.39	0.00026	3.6	-0.000005	1.01	2.39	-10	0.000022	0.00209	-0.0005	0.00897	0.0015	0.0022	-0.0001		B091561	1.80	1.64	-0.16	-4.7%																																																																																																																																																																																																																																																																			
27-Sep-10	10	500	445	7.94	345	127	#N/A	3.7	76.2	12	-0.5	0.72	71.2	0.0542	0.00383	0.00072	0.212	-0.00001	0.000005	-0.05	0.000128	21.4	0.0001	0.000049	0.00266	0.013	0.000151	0.0047	4.34	0.0821	-0.01	0.0224	0.00031	0.009	4.39	0.00026	3.6	-0.000005	1.01	2.39	-10	0.000022	0.00209	-0.0005	0.00897	0.0015	0.0022	-0.0001		B091561	1.80	1.64	-0.16	-4.7%																																																																																																																																																																																																																																																																			
4-Oct-10	11	500	450	7.86	338	159	#N/A	3.2	82.7	13	-0.5	0.8	72.7	0.0488	0.00381	0.0007	0.275	-0.00001	-0.000005	-0.05	0.000159	22	0.0002	0.000065	0.00121	0.008	0.000097	0.0049	4.32	0.0935	-0.01	0.0265	0.0003	0.009	4.63	0.00023	3.76	-0.000005	1	2.49	-10	0.00002	0.00103	-0.0005	0.0101	0.0015	0.0024	-0.0001		B096721	1.95	1.67	-0.28	-7.8%																																																																																																																																																																																																																																																																			
11-Oct-10	12	500	480	7.87	319	155	#N/A	3.2	83.2	12	-0.5	0.73	68.6	0.0497	0.00336	0.00073	0.312	-0.00001	-0.000005	-0.05	0.000195	20.6	0.0002	0.00007	0.00171	0.011	0.000121	0.0046	4.15	0.0983	-0.01	0.0219	0.00054	0.005	4.25	0.00024	3.13	-0.000005	0.84	2.37	-10	0.000019	0.00055	-0.0005	0.00959	0.0014	0.006	-0.0001		B0A4166	1.90	1.57	-0.33	-9.8%																																																																																																																																																																																																																																																																			
18-Oct-10	13	500	465	7.90	341	152	#N/A	3.7	82.5	11	-0.5	0.73	68.6	0.0497	0.00336	0.00073	0.312	-0.00001	-0.000005	-0.05	0.000195	20.6	0.0002	0.00007	0.00171	0.011	0.000121	0.0046	4.15	0.0983	-0.01	0.0219	0.00054	0.005	4.25	0.00024	3.13	-0.000005	0.84	2.37	-10	0.000019	0.00055	-0.0005	0.00959	0.0014	0.006	-0.0001		B0A4166	1.90	1.57	-0.33	-9.8%																																																																																																																																																																																																																																																																			
25-Oct-10	14	500	465	7.90	341	152	#N/A	3.7	82.5	11	-0.5	0.73	68.6	0.0497	0.00336	0.00073	0.312	-0.00001	-0.000005	-0.05	0.000195	20.6	0.0002	0.00007	0.00171	0.011	0.000121	0.0046	4.15	0.0983	-0.01	0.0219	0.00054	0.005	4.25	0.00024	3.13	-0.000005	0.84	2.37	-10	0.000019	0.00055	-0.0005	0.00959	0.0014	0.006	-0.0001		B0A4166	1.90	1.57	-0.33	-9.8%																																																																																																																																																																																																																																																																			
1-Nov-10	15	500	435	7.98	382	149	#N/A	2.4	82.9	8	-0.5	0.66	69.9	0.0432	0.00283	0.00067	0.32	-0.00001	-0.000005	-0.05	0.000174	21.8	-0.0001	0.000071	0.00229	0.016	0.000069	0.0038	3.75	0.0972	-0.01	0.0203	0.00043	0.005	3.81	0.00023	3.7	-0.000005	0.74	2.2	-10	0.000017	0.0003	-0.0005	0.00925	0.0014	0.0031	-0.0001		B0A4167	1.84	1.58	-0.27	-7.8%																																																																																																																																																																																																																																																																			
8-Nov-10	16	500	470	7.86	379	153	#N/A	2.7	80.2	7	-0.5	0.66	69.9	0.0432	0.00283	0.00067	0.32	-0.00001	-0.000005	-0.05	0.000174	21.8	-0.0001	0.000071	0.00229	0.016	0.000069	0.0038	3.75	0.0972	-0.01	0.0203	0.00043	0.005	3.81	0.00023	3.7	-0.000005	0.74	2.2	-10	0.000017	0.0003	-0.0005	0.00925	0.0014	0.0031	-0.0001		B0A4167	1.84	1.58	-0.27	-7.8%																																																																																																																																																																																																																																																																			
15-Nov-10	17	500	460	7.95	368	161	#N/A	3.4	84.7	8	-0.5	0.79	74.8	0.0427	0.00311	0.00064	0.393	-0.00001	-0.000005	-0.05	0.000231	23.1	0.0001	0.000061	0.0011	0.004	0.000062	0.0042	4.14	0.115	-0.01	0.021	0.00023	0.006	4.14	0.00019	3.66	-0.000005	0.78	2.47	-10	0.000019	0.0003	-0.0005	0.0101	0.0013	0.0003	-0.0001		Y62014	B0B4311	1.89	1.69	-0.20	-5.5%																																																																																																																																																																																																																																																																		
22-Nov-10	18	500	490	7.76	334	152	#N/A	4.4	84.2	8	-0.5	0.79	74.8	0.0427	0.00311	0.00064	0.393	-0.00001	-0.000005	-0.05	0.000231	23.1	0.0001	0.000061	0.0011	0.004	0.000062	0.0042	4.14	0.115	-0.01	0.021	0.00023	0.006	4.14	0.00019	3.66	-0.000005	0.78	2.47	-10	0.000019	0.0003	-0.0005	0.0101	0.0013	0.0003	-0.0001		Y62014	B0B4311	1.89	1.69	-0.20	-5.5%																																																																																																																																																																																																																																																																		
29-Nov-10	19	500	490	7.79	334	148	#N/A	4.4	82.2	8	-0.5	0.66	62.1	0.00311	0.00234	0.00052	0.348	-0.00001	-0.000005	-0.05	0.000236	19.2	-0.0001	0.000049	0.00184	0.004	0.000347	0.0032	3.43	0.116	-0.01	0.0128	0.00023	0.002	3.07	0.00026	2.52	-0.000005	0.55	2.07	-10	0.000023	0.00018	-0.0005	0.00807	0.0009	0.0038	-0.0001		Y84119	B0B0896																																																																																																																																																																																																																																																																						</

Aug 23/10 Cr 0.0004. Repeat = 0.0006, confirmed.

April 28/10 Ca 206. Repeat = Ca 93.3
Sept 15/10 Ti <0.001. Transcription error.

August 10/10 Leak.
June 30/10 conductivity 537. Transposition error with bottom sample
Sept 15/10 TI <0.001. Transcription error.

June 30/10 conductivity 211. Transposition error with surface sample.
June 9/10 Pb 0.0077, Ni 0.003, P 7.34, Ag 0.00055. Repeat = results confirmed. Suspect contamination.
Sept 15/10 TI <0.001. Transcription error.

Sample #					Whole Comp (+100 mesh) Tailings										CONFIDENTIAL																														DRAFT											
Date	Cycle	Volume ml	Input	Output	pH	ORP mV	Conc. umhos/cm	Acidity (pH 4.3) mgCaCO3/L	Acidity (pH 8.3) mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness CaCO3 mg/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Ti mg/L	Sn mg/L	Ta mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L	Maxam ID	Job #	Major Anions	Major Catons	Diff	Diff %	
18-Jan-10	0	750	435	759	359	702	#N/A	#N/A	3.9	35.7	274	2.6	2.41	262	0.0195	0.0077	0.0141	0.0509	-0.00002	-0.00001	0.018	0.000217	75.7	0.120	-0.01	0.129	0.0013	-0.01	24.4	0.00223	13.0	0.00001	12.5	5.76	108	-0.0002	0.00470	0.0004	0.00992	0.00058	0.005	0.00002	6.62	6.41	-0.21	-1.6%										
25-Jan-10	1	500	435	782	387	438	#N/A	#N/A	3.1	68.9	220	0.9	2.13	272	0.0188	0.0111	0.0524	0.0382	-0.00001	-0.00005	-0.005	0.000284	86.5	0.0003	0.00321	0.00489	-0.002	0.000227	0.0156	13.8	0.141	-0.01	0.0418	0.00169	0.003	15.5	0.00214	4.06	0.000007	8.43	5.63	58	-0.0001	0.00324	-0.0005	0.0248	0.0006	0.005	-0.0001	#REF!	#REF!	#REF!	#REF!			
1-Feb-10	2	500	395	790	374	276	#N/A	#N/A	2.4	72.2	107	-0.5	1.98	199	0.0281	0.0106	0.0445	0.0526	-0.00001	0.000006	-0.005	0.000261	62.7	0.0006	0.000231	0.00153	0.007	0.000413	0.0129	10.3	0.114	-0.01	0.0359	0.00099	-0.002	12.3	0.00154	4.69	-0.000005	5.24	4.52	36	0.000086	0.00374	-0.0005	0.0159	0.0006	0.0047	-0.0001	3.78	4.52	0.74	8.9%			
8-Feb-10	3	500	435	774	300	276	#N/A	#N/A	3.3	68.5	75	-0.5	1.96	167	0.0265	0.0106	0.0405	0.0582	-0.00001	0.000005	-0.005	0.000265	63.2	-0.0001	0.000164	0.00072	0.002	0.00036	0.0107	8.39	0.0989	-0.01	0.0392	0.00082	-0.002	9.64	0.00141	4.87	-0.000005	5.61	3.88	27	0.000068	0.00316	-0.0005	0.0159	0.0006	0.0037	-0.0001	3.04	3.75	0.71	10.5%			
15-Feb-10	4	500	425	787	309	225	#N/A	#N/A	2.3	69.3	55	-0.5	1.93	144	0.0265	0.0106	0.0405	0.0582	-0.00001	0.000005	-0.005	0.000265	63.2	-0.0001	0.000164	0.00072	0.002	0.00036	0.0107	8.39	0.0989	-0.01	0.0392	0.00082	-0.002	9.64	0.00141	4.87	-0.000005	5.61	3.88	27	0.000068	0.00316	-0.0005	0.0159	0.0006	0.0037	-0.0001	3.04	3.75	0.71	10.5%			
22-Feb-10	5	500	420	801	332	226	#N/A	#N/A	1.6	72.0	43	-0.5	1.72	137	0.0337	0.0097	0.0254	0.0826	-0.00001	0.00001	-0.005	0.000277	44.7	-0.0001	0.00012	0.001	0.001	0.000408	0.008	6.27	0.0842	-0.01	0.0481	0.00045	-0.002	7.07	0.00116	4.75	-0.000005	2.05	3.23	18	0.000055	0.00299	-0.0005	0.0139	0.0008	0.0038	-0.0001	2.39	3.02	0.62	11.5%			
1-Mar-10	6	500	420	801	332	226	#N/A	#N/A	1.6	72.0	43	-0.5	1.72	137	0.0337	0.0097	0.0254	0.0826	-0.00001	0.00001	-0.005	0.000277	44.7	-0.0001	0.00012	0.001	0.001	0.000408	0.008	6.27	0.0842	-0.01	0.0481	0.00045	-0.002	7.07	0.00116	4.75	-0.000005	2.05	3.23	18	0.000055	0.00299	-0.0005	0.0139	0.0008	0.0038	-0.0001	2.39	3.02	0.62	11.5%			
8-Mar-10	7	500	435	771	340	188	#N/A	#N/A	3.2	62.3	34	-0.5	1.66	116	0.0358	0.00959	0.012	0.0955	-0.00001	0.000009	-0.005	0.000283	37	-0.0001	0.000089	0.00071	0.002	0.000401	0.0064	5.75	0.0707	-0.01	0.0546	0.00031	-0.002	5.69	0.00088	4.14	-0.000005	1.58	2.97	12	0.000043	0.00397	-0.0005	0.0106	0.0007	0.0035	-0.0001	2.04	2.53	0.49	10.8%			
15-Mar-10	8	500	440	797	347	174	#N/A	#N/A	2.0	71.4	26	-0.5	1.66	116	0.0358	0.00959	0.012	0.0955	-0.00001	0.000009	-0.005	0.000283	37	-0.0001	0.000089	0.00071	0.002	0.000401	0.0064	5.75	0.0707	-0.01	0.0546	0.00031	-0.002	5.69	0.00088	4.14	-0.000005	1.58	2.97	12	0.000043	0.00397	-0.0005	0.0106	0.0007	0.0035	-0.0001	2.04	2.53	0.49	10.8%			
22-Mar-10	9	500	420	801	343	193	#N/A	#N/A	1.5	72.0	32	-0.5	-2	108	0.0395	0.0105	0.00847	0.114	-0.00001	0.000015	-0.005	0.00039	33.7	0.0001	0.000111	0.00063	0.005	0.000491	0.0071	5.85	0.0823	-0.01	0.0589	0.00054	-0.002	5.3	0.00097	4.14	-0.000005	1.42	3.13	10	0.000048	0.00506	-0.0005	0.0116	0.0009	0.0066	-0.0001	2.02	2.36	0.34	7.7%			
29-Mar-10	10	500	420	794	351	197	#N/A	#N/A	2.1	73.1	32	-0.5	1.73	114	0.0335	0.0107	0.00576	0.136	-0.00001	0.000009	-0.005	0.00045	36.5	-0.0001	0.00008	0.00058	0.002	0.000401	0.0059	5.54	0.088	-0.01	0.0705	0.00046	0.002	4.99	0.00091	4.45	0.000013	1.19	2.97	10	0.000038	0.00442	0.0005	0.0113	0.0009	0.0084	-0.0001	2.20	2.46	0.26	5.6%			
5-Apr-10	11	500	410	809	334	191	#N/A	#N/A	2.0	71.9	30	-0.5	1.73	114	0.0335	0.0107	0.00576	0.136	-0.00001	0.000009	-0.005	0.00045	36.5	-0.0001	0.00008	0.00058	0.002	0.000401	0.0059	5.54	0.088	-0.01	0.0705	0.00046	0.002	4.99	0.00091	4.45	0.000013	1.19	2.97	10	0.000038	0.00442	0.0005	0.0113	0.0009	0.0084	-0.0001	2.20	2.46	0.26	5.6%			
12-Apr-10	12	500	460	781	351	192	#N/A	#N/A	3.4	76.8	26	-0.5	1.83	116	0.036	0.0105	0.00456	0.163	-0.00001	0.000013	-0.005	0.000498	36.4	0.0002	0.000113	0.00062	0.005	0.000561	0.0062	5.98	0.0958	-0.01	0.0791	0.00061	0.004	5	0.00112	4.68	-0.000005	1.28	3.11	-10	0.000039	0.0043	-0.0005	0.0129	0.001	0.0052	-0.0001	2.17	2.49	0.32	6.9%			
19-Apr-10	13	500	420	796	351	209	#N/A	#N/A	2.5	77.8	25	-0.5	1.78	116	0.036	0.0105	0.00456	0.163	-0.00001	0.000013	-0.005	0.000498	36.4	0.0002	0.000113	0.00062	0.005	0.000561	0.0062	5.98	0.0958	-0.01	0.0791	0.00061	0.004	5	0.00112	4.68	-0.000005	1.28	3.11	-10	0.000039	0.0043	-0.0005	0.0129	0.001	0.0052	-0.0001	2.17	2.49	0.32	6.9%			
26-Apr-10	14	500	440	791	336	194	#N/A	#N/A	2.5	80.2	24	-0.5	2.2	115	0.0413	0.00803	0.00242	0.154	-0.00001	0.000028	-0.005	0.000464	37.8	-0.0001	0.000083	0.00116	0.005	0.000634	0.0049	4.89	0.0818	-0.01	0.066	0.00033	0.002	4.2	0.0011	4.35	-0.000005	0.94	2.51	-10	0.000031	0.00468	-0.0005	0.00953	0.0009	0.0045	-0.0001	1.96	2.44	0.48	10.8%			
3-May-10	15	500	450	796	321	175	#N/A	#N/A	2.1	69.4	22	-0.5	2.2	115	0.0413	0.00803	0.00242	0.154	-0.00001	0.000028	-0.005	0.000464	37.8	-0.0001	0.000083	0.00116	0.005	0.000634	0.0049	4.89	0.0818	-0.01	0.066	0.00033	0.002	4.2	0.0011	4.35	-0.000005	0.94	2.51	-10	0.000031	0.00468	-0.0005	0.00953	0.0009	0.0045	-0.0001	1.96	2.44	0.48	10.8%			
10-May-10	16	500	440	786	356	186	#N/A	#N/A	2.8	75.4	27	-0.5	1.59	98.5	0.0446	0.00907	0.00203	0.162	-0.00001	0.00001	-0.005	0.000506	32.3	-0.0001	0.000102	0.0015	0.002	0.000449	0.0047	4.33	0.0748	-0.01	0.0871	0.0003	-0.002	3.98	0.00108	4.47	-0.000005	0.83	2.29	-10	0.000038	0.00484	-0.0005	0.00909	0.001	0.0046	-0.0001	1.74	2.11	0.36	9.4%			
17-May-10	17	500	405	797	343	165	#N/A	#N/A	2.1	63.2	18	-0.5	1.59	98.5	0.0446	0.00907	0.00203	0.162	-0.00001	0.00001	-0.005	0.000506	32.3	-0.0001	0.000102	0.0015	0.002	0.000449	0.0047	4.33	0.0748	-0.01	0.0871	0.0003	-0.002	3.98	0.00108	4.47	-0.000005	0.83	2.29	-10	0.000038	0.00484	-0.0005	0.00909	0.001	0.0046	-0.0001	1.74	2.11	0.36	9.4%			
24-May-10	18	500	410	771	375	165	#N/A	#N/A	4.9	70.4	13	-0.5	1.78	104	0.039	0.009	0.0021	0.177	-0.00005	-0.00003	-0.3	0.00058	32.6	-0.0005	0.00009	0.0028	-0.005	0.00043	0.005	5.4	0.0816	-0.05	0.076	0.0003	-0.01	4	0.0017	4.88	-0.00003	1	2.35	-50	0.00005	0.00532	-0.003	0.0104	-0.001	0.0081	-0.0005	1.83	2.22	0.38	9.4%			
31-May-10	19	500	420	772	351	177	#N/A	#N/A	3.8	74.5	12	-0.5	1.78	104	0.039	0.009	0.0021	0.177	-0.00005	-0.00003	-0.3	0.00058	32.6	-0.0005	0.00009	0.0028	-0.005	0.00043	0.005	5.4	0.0816	-0.05	0.076	0.0003	-0.01	4	0.0017	4.88	-0.00003	1	2.35	-50	0.00005	0.00532	-0.003	0.0104	-0.001	0.0081	-0.0005	1.83	2.22	0.38	9.4%			
7-Jun-10	20	500	415	785	360	185	#N/A	#N/A	3.4	79.4	14	-0.5	1.91	81.7	0.0348	0.00932	0.00203	0.176	-0.00001	0.00001	-0.005	0.000654	23.6	0.0002	0.000077	0.00062	0.004	0.000394	0.005	5.56	0.0968	-0.01	0.09	0.00032	-0.002	4.24	0.00107	4.65	-0.000005	1.05	2.43	-10	0.000037	0.00637	-0.0005	0.011	0.001	0.0053	-0.0001	B047742	1.89	1.79	-0.10	-2.7%		
14-Jun-10	21	500	420	794	352	186	#N/A	#N/A	3.0	77.9	11	-0.5	1.91	81.7	0.0348	0.00932	0.00203	0.176	-0.00001	0.00001	-0.005	0.000654	23.6	0.0002	0.000077	0.00062	0.004	0.000394	0.005	5.56	0.0968	-0.01	0.09	0.00032	-0.002	4.24	0.00107	4.65	-0.000005	1.05	2.43	-10	0.000037	0.00637	-0.0005	0.011	0.001	0.0053	-0.0001	B047742	1.89	1.79	-0.10	-2.7%		
21-Jun-10	22	500	415	803	405	162	#N/A	#N/A	2.1	68.5	13	-0.5	1.89	90.8	0.03																																									

July 26/10 Cr 0.0007. Repeat = 0.001, confirmed
Aug 23/10 Cr 0.0006. Repeat = 0.001, confirmed

July 26/10 Fe 0.012. Repeat = 0.012. Suspect contamination
July 26/10 Cr 0.0007. Repeat = 0.0008. Confirmed.
Aug 23/10 Cr 0.0005. Repeat = 0.0008, confirmed.

[illegible]

Aug 23/10 Cr 0.0006. Repeat = 0.0008, confirmed.

[illegible]

Aug 23/10 Cr 0.0006. Repeat = 0.0008, confirmed.
Sept 6/10 F 0.02. Repeat = 0.99

[illegible]

Aug 23/10 Cr 0.0004. Repeat = 0.0006, confirmed.

April 28/10 Ca 206. Repeat = Ca 93.3
Sept 15/10 Ti <0.001. Transcription error.

August 10/10 Leak.
June 30/10 conductivity 537. Transposition error with bottom sample
Sept 15/10 TI <0.001. Transcription error.

June 30/10 conductivity 211. Transposition error with surface sample.
June 9/10 Pb 0.0077, Ni 0.003, P 7.34, Ag 0.00055. Repeat = results confirmed. Suspect contamination.
Sept 15/10 TI <0.001. Transcription error.

Appendix I: Quality Control Results

Appendix I1. QA/QC - Acid-Base Accounting (ABA) for Rock Samples

Sample ID		Acid Potentials				Neutralization Potentials			
		Paste pH	Total S	Sulphate S	Sulphide S	Fizz Test	Modified NP	TIC	Total C
		Std. Units	% S	% S	% S	Visual	kg CaCO3/t	% C	%
Duplicate	Patsy Dump 01	6.60				None	4.1		
Original		6.40				None	5.0		
RPD		3%					-20%		
Duplicate	Patsy Dump 01 +6.3mm		0.24	0.06				0.01	
Original			0.24	0.06				0.01	
RPD			0%	0%				0%	
Duplicate	Patsy Dump 04 +6.3mm		0.55	0.02				0.19	
Original			0.55	0.02				0.20	
RPD			0%	0%				-5%	
Duplicate	Patsy Dump 05 -2mm	8.27				Slight	32.9		
Original		8.25				Slight	33.8		
RPD		0%					-3%		
Duplicate	Clary Dump 06	8.32				Moderate	33.4		
Original		8.24				Moderate	34.2		
RPD		1%					-2%		
Duplicate	Clary Dump 07 -6.3mm + 2mm		0.19	0.10				0.01	
Original			0.19	0.10				0.01	
RPD			0%	0%				0%	
Duplicate	Clary Dump 08								0.16
Original									0.16
RPD									0%
Duplicate	Clary Dump 08 +6.3mm		1.22	0.04				0.10	
Original			1.21	0.04				0.09	
RPD			1%	0%				11%	
Duplicate	K09-15AGT 0-4								0.28
Original									0.28
RPD									0%
Duplicate	K09-15AGT 29-34		0.62	0.02				0.46	
Original			0.63	0.02				0.47	0.76
RPD			-2%	0%				-2%	
Duplicate	K09-15AGT 44-49		0.40	0.05				0.36	0.69
Original			0.43	0.05				0.36	0.69
RPD			-7%	0%				0%	0%
Duplicate	K09-15AGT 55-59	6.03				None	2.4		
Original		6.07				None	4.0		
RPD		-1%					-51%		
Duplicate	K09-15GT 5-10	7.68				Slight	14.4		
Original		7.66				Slight	15.0		
RPD		0%					-4%		
Duplicate	K09-15GT 34-39		0.37	0.02				0.22	
Original			0.39	0.02				0.22	
RPD			-5%	0%				0%	
Duplicate	K08-10 126-129	9.09	1.35	0.02		Slight	26.1	0.33	
Original		8.97	1.35	0.02		Slight	26.9	0.33	
RPD		1%	0%	0%			-3%	0%	
Duplicate	K08-10 219-222		2.36	0.04				0.54	
Original			2.35	0.03				0.54	
RPD			0%	29%				0%	
Duplicate	K08-10 153-156	8.77				Moderate	25.7		
Original		8.51				Moderate	25.9		
RPD		3%					-1%		
Duplicate	K08-24 12-15	8.76				Slight	13.5		
Original		8.74				Slight	13.8		
RPD		0%					-2%		
Duplicate	K08-24 123-126	8.65				Slight	28.6		
Original		8.50				Slight	28.7		
RPD		2%					0%		
Duplicate	K08-24 144-147		2.48	0.02				0.23	
Original			2.46	0.02				0.23	
RPD			1%	0%				0%	
Duplicate	K08-18 99-102		1.59	0.01				0.46	
Original			1.61	0.01				0.47	
RPD			-1%	0%				-2%	
Duplicate	K08-27 18-21		1.93	0.01				0.56	
Original			1.97	0.01				0.56	
RPD			-2%	0%				0%	
Duplicate	K08-02 204-207		1.93	0.07		Moderate	176.5	2.36	
Original			1.91	0.07		Moderate	176.6	2.37	
RPD			1%	0%			0%	0%	
Duplicate	K08-08 93-96		1.54	0.01				0.29	
Original			1.51	0.01				0.29	
RPD			2%	0%				0%	
Duplicate	K10-01-GT 5-7		8.10	0.40	0.02	None	11.30	0.10	
Original	K10-01-GT 5-7		7.88	0.40	0.02	None	10.90	0.1	
RPD			3%	0%	0%		4%	0%	
Duplicate	K10-02-GT 4-6			0.67	0.02			0.23	
Original	K10-02-GT 4-6			0.71	0.02			0.2	
RPD				-6%	0%			0%	
Duplicate	K10-04-GT 15-17		8.07			Moderate	39.80		
Original	K10-04-GT 15-17		8.06			Moderate	40.40		
RPD			0%				-1%		
Duplicate	K10-04-GT 22-25		8.42	0.49	0.02	Moderate	42.50	0.51	
Original	K10-04-GT 22-25		8.17	0.48	0.02	Moderate	43.20	0.5	
RPD			3%	2%	0%		-2%	2%	
Duplicate	K10-04-GT 32-35			0.66	0.02			0.44	
Original	K10-04-GT 32-35			0.66	0.02			0.5	
RPD				0%	0%			-2%	
Duplicate	K10-05-GT 67-70			0.60	0.08			0.05	
Original	K10-05-GT 67-70			0.61	0.08			0.1	
RPD				-2%	0%			0%	
Duplicate	K10-08-GT SPT 08-1 4		8.66			Moderate	41.40		
Original	K10-08-GT SPT 08-1 4		8.66			Moderate	42.30		
RPD			0%				-2%		
Duplicate	K10-08-GT SPT 08-2 9		8.37			Moderate	53.50		
Original	K10-08-GT SPT 08-2 9		8.24			Moderate	52.70		
RPD			2%				2%		
Duplicate	K10-08-GT SPT 08-4 19			0.55	0.06			0.25	
Original	K10-08-GT SPT 08-4 19			0.56	0.06			0.3	
RPD				-2%	0%			0%	
Duplicate	K10-10-GT SPT 10-5 24			0.95	0.01			0.54	
Original	K10-10-GT SPT 10-5 24			0.99	0.01			0.5	
RPD				-4%	0%			0%	
Duplicate	K10-11-GT SPT 11-5 24			0.89	0.01			0.43	
Original	K10-11-GT SPT 11-5 24			0.90	0.01			0.4	
RPD				-1%	0%			0%	
Duplicate	K10-27-GT 43-46		8.92						
Original	K10-27-GT 43-46		8.94						
RPD			0%						
Duplicate	K10-27-GT 68-71			0.77	<0.01			0.42	
Original	K10-27-GT 68-71			0.78	<0.01			0.4	
RPD				-1%	0%			-2%	

Notes:

Brown *italics* = less than detection limit, detection limit shown.

Total sulphur = HCL Leach; S(SO4) = sulphate sulphur; S(S-2) = sulphide sulphur.

AP = Acid potential in kg CaCO3 equivalent per tonne of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO4).

Modified Sobek NP = Modified Sobek Neutralization potential (Lawrence & Wang, 1997) in kg CaCO3 equivalent per tonne of material.

TIC = Total Inorganic Carbon; C(T) = Total Carbon.

CaCO3 NP = Carbonate Neutralization Potential. CaCO3 NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

Net NP = Net Neutralization Potential, NP - AP.

NPR = Neutralization Potential Ratio, NP/AP.

Appendix I2. QA/QC - Trace Metals for Rock Samples

Sample ID		Lithology	Metals by Aqua Regia Digestion with ICP-MS Finish, F by single element assay																																										
			Au	Ag	Al	As	B	Ba	Bi	Ca	Cd	Co	Cr	Cu	F	Fe	Ga	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sr	Te	Th	Ti	Tl	U	V	W	Zn					
			ppb	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm		
Duplicate	Patsy Dump 01 +6.3mm	intrusives												0.03																															
Original	Patsy Dump 01 +6.3mm	intrusives												0.02																															
RPD														40%																															
Duplicate	Patsy Dump 04 +6.3mm	intrusives												0.05																															
Original	Patsy Dump 04 +6.3mm	intrusives												0.04																															
RPD														22%																															
Duplicate	Patsy Dump 05 -6.3mm + 2mm	hornfels	44.7	2.1	0.63	21.6	20	171	5	1.23	10.6	10.4	50	59.7	0.06	2.34	2	0.04	0.28	8	0.33	1209	352.4	0.009	14.3	0.075	227.5	1.48	2.2	4.0	1.4	55		2.5	0.01	0.2	1.7	16	2.2	382					
Original	Patsy Dump 05 -6.3mm + 2mm	hornfels	227.7	2.3	0.68	22.5	20	202	5.6	1.25	11.6	10.4	63	62.4	0.04	2.41	2	0.05	0.29	8	0.33	1211	362.8	0.009	15.2	0.078	236	1.5	2.2	4.3	1.2	55		2.6	0.011	0.3	1.7	17	2.2	409					
RPD			-134%	-9%	-8%	-4%	0%	-17%	-11%	-2%	-9%	0%	-23%	-4%	40%	-3%	0%	-22%	-4%	0%	0%	-0.2%	-3%	0%	-6%	-4%	-4%	-1%	0%	-7%	15%	0%		-4%	-10%	-40%	0%	-6%	0%	-7%					
Duplicate	Clary Dump 07 -6.3mm + 2mm	intrusives												0.03																															
Original	Clary Dump 07 -6.3mm + 2mm	intrusives												0.06																															
RPD														57%																															
Duplicate	Clary Dump 09	hornfels	6.3	0.4	1.17	64.9	20	202	0.4	0.63	1.2	15.8	107	101		3.12	5	0.01	0.69	6	0.73	731	184	0.052	46	0.069	21.3	1.16	1.8	6.7	1.7	37		1.1	0.091	0.4	0.5	61	8.1	83					
Original	Clary Dump 09	hornfels	3.9	0.4	1.18	63.5	20	202	0.4	0.64	1.4	16.7	103	94.5		3.15	5	0.01	0.72	6	0.74	748	184.1	0.052	45.4	0.072	22	1.23	1.9	6.5	1.8	36		1.1	0.089	0.4	0.4	62	10.1	87					
RPD			47%	0%	-1%	2%	0%	0%	0%	-2%	-15%	-6%	4%	7%		-1%	0%	0%	-4%	0%	-1%	-2%	0%	0%	1%	-4%	-3%	-6%	-5%	3%	-6%	3%		0%	2%	0%	22%	-2%	-22%	-5%					
Duplicate	K08-22 111-114	Alaskite (Aplite)	2.7	0.2	0.27	0.5	20	184	0.4	0.69	0.7	1.6	83	7		0.44	1	0.01	0.19	9	0.14	219	335	0.012	3.5	0.022	25.2	0.41	0.4	0.6	0.5	150		7	0.02	0.1	0.9	7	0.8	38					
Original	K08-22 111-114	Alaskite (Aplite)	1.7	0.2	0.26	0.6	20	183	0.4	0.71	0.8	1.5	81	5.6		0.43	1	0.01	0.18	9	0.14	219	336.9	0.011	2.6	0.022	23.8	0.41	0.4	0.6	0.5	149		6.9	0.019	0.1	0.8	7	0.7	37					
RPD			45%	0%	4%	-18%	0%	1%	0%	-3%	-13%	6%	2%	22%		2%	0%	0%	5%	0%	0%	0.0%	-1%	9%	30%	0%	6%	0%	0%	0%	0%	1%		1%	5%	0%	12%	0%	13%	3%					
Duplicate	K08-03 135-138	Lamprophyre	6.9	1.1	1.75	0.9	20	639	3.5	4.59	1.5	29.2	92	48.8		4.47	6	0.07	0.29	32	1.12	1194	140	0.05	77.5	0.246	134.6	0.61	1.1	9.3	0.6	728		2.5	0.073	0.1	2.2	75	0.2	105					
Original	K08-03 135-138	Lamprophyre	6.9	1.1	1.82	1	20	641	3.1	4.78	1.7	28.9	93	50		4.64	6	0.08	0.31	32	1.19	1242	157.6	0.052	78.8	0.268	131.2	0.65	1.1	9.5	0.5	791		2.5	0.075	0.1	2.3	77	0.2	117					
RPD			0%	0%	-4%	-11%	0%	0%	12%	-4%	-13%	1%	-1%	-2%		0%	0%	-13%	-7%	0%	-6%	-4%	-12%	-4%	-2%	-9%	3%	-6%	0%	-2%	18%	-8%		0%	-3%	0%	-4%	-3%	0%	-11%					
Duplicate	K08-02 204-207	Lamprophyre												0.09																															
Original	K08-02 204-207	Lamprophyre												0.08																															
RPD														12%																															
Duplicate	K08-08 93-96	Northeast Porphyry (QMP)												0.05																															
Original	K08-08 93-96	Northeast Porphyry (QMP)												0.04																															
RPD														22%																															
Duplicate	K08-10 126-129	Granodiorite(M,QM)												0.15																															
Original	K08-10 126-129	Granodiorite(M,QM)												0.14																															
RPD														7%																															
Duplicate	K08-10 219-222	Granodiorite(M,QM)												0.14																															
Original	K08-10 219-222	Granodiorite(M,QM)												0.15																															
RPD														-7%																															
Duplicate	K08-18 99-102	hornfels												0.09																															
Original	K08-18 99-102	hornfels												0.1																															
RPD														-11%																															
Duplicate	K08-24 144-147	Granodiorite(M,QM)												0.08																															
Original	K08-24 144-147	Granodiorite(M,QM)												0.08																															
RPD														0%																															
Duplicate	K08-27 18-21	hornfels												0.08																															
Original	K08-27 18-21	hornfels												0.08																															
RPD														0%																															
Duplicate	K09-15GT 34-39	Patsy Dump												0.06																															
Original	K09-15GT 34-39	Patsy Dump												0.06																															
RPD														0%																															
Duplicate	K09-15AGT 29-34	Patsy Dump												0.07																															
Original	K09-15AGT 29-34	Patsy Dump												0.08																															
RPD														-13%																															
Duplicate	K09-15AGT 44-49	Patsy Dump												0.07																															
Original	K09-15AGT 44-49	Patsy Dump												0.07																															
RPD														0%																															

Notes:
Brown italics = less than detection limit, detection limit shown.

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Appendix I3. QA/QC - ABA Results for Metallurgical Samples

Sample ID			Acid Potentials				Neutralization Potentials					
		Paste pH	S(T)	S(SO4)	S(S-2)	AP	Fizz Test	Modified NP	TIC	CaCO3 NP	Net NP	NPR
		Std Units	%	%	%	kgCaCO3/t	Visual	kgCaCO3/t	%	kgCaCO3/t	kgCaCO3/t	
	Lab Duplicates											
Duplicate	Diorite Whole Ro Tails Whole Sample	8.01					Slight	36.5				
Original	Diorite Whole Ro Tails Whole Sample	7.87	1.8	0.06	1.74	54.4	Slight	37.3	0.45	37.5	-17.1	0.69
RPD		2%						-2%				
Duplicate	Quartz Monzonite Whole Ro Tails -200		1.47	0.06					0.72			
Original	Quartz Monzonite Whole Ro Tails -200	7.97	1.49	0.06	1.43	44.7	Moderate	52.8	0.72	60.0	8.1	1.18
RPD				0%					0%			
Duplicate	Hornfels Composite		1.24	0.04					0.46			
Original	Hornfels Composite	8.51	1.23	0.04	1.19	37.2	Moderate	35.8	0.47	39.2	-1.4	0.96
RPD			1%	0%					-2%			
Duplicate	Pyrite Rougher Con	7.59					Moderate	24.7				
Original	Pyrite Rougher Con	7.57	34.7	0.03	34.67	1083.4	Moderate	26.2	0.30	25.0	-1057.2	0.02
RPD		0%						-6%				
Duplicate	Pyrite Rougher Tails		0.25	0.02					0.50			
Original	Pyrite Rougher Tails	8.58	0.26	0.02	0.24	7.5	Moderate	41.2	0.51	42.5	33.7	5.49
RPD			-4%	0%					-2%			
Duplicate	De-pyritized Cycloned RST Overflow	8.41					Slight	40.4				
Original	De-pyritized Cycloned RST Overflow	8.26	0.08	0.01	0.07	2.2	Slight	42.6	0.49	40.8	40.4	19.5
RPD		2%						-5%				
Duplicate	Rougher Tails (RST)		1.47	0.02					0.50			
Original	Rougher Tails (RST)	8.37	1.45	0.02	1.43	44.7	Slight	40.6	0.49	40.8	-4.1	0.9
RPD			1%	0%					2%			

Appendix I4. QA/QC - Trace Elements for Metallurgical Samples

Sample ID		Metals by Aqua Regia Digestion with ICP-MS Finish																																									
		Ag ppm	Al %	As ppm	Au ppb	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	F %	Fe %	Ga ppm	Hg ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm			
Lab Duplicates																																											
Duplicate	Diorite Composite	6.2	0.76	2.1	9.3	20	45	37.1	1.70	22.4	11	79	90.7		2.40	4	0.11		0.46	18	0.65	969	946.3	0.039	8.0	0.112	333	1.85	8.1	2.5	1.4	238		4.9	0.077	0.2	2.4	40	11.2	635			
Original	Diorite Composite	6.1	0.73	2.4	7.8	20	35	34.8	1.67	21.3	11	79	84.4		2.35	4	0.11		0.45	18	0.63	943	951.9	0.036	7.1	0.104	321	1.8	7.8	2.4	1.3	227		4.7	0.072	0.2	2.2	39	12.1	627			
RPD		2%	4%	-13%	18%	0%	25%	6%	2%	5%	0%	0%	7%		2%	0%	0%		2%	0%	3%	3%	-1%	8%	12%	7%	4%	3%	4%	4%	7%	5%		4%	7%	0%	9%	3%	-8%	1%			
Duplicate	Avanti Master Comp. Ore													0.06																													
Original	Avanti Master Comp. Ore	4.1	0.73	4.5	14.7	20	40	32.4	1.55	15.2	10.6	77	70.9	0.06	2.21	3	0.06		0.4	16	0.58	852	993.2	0.033	14.5	0.085	258.5	1.57	4.7	3	2.1	212		5.1	0.062	0.3	2.3	31	14.4	528			
RPD														0%																													
Duplicate	Rougher Tails (RST)													0.12				443													0.5												
Original	Rougher Tails (RST)	4.3	0.67	4.9	5.6	20	101	28.6	1.46	16.2	10.6	75	55.2	0.13	2.16	3	0.06	453	0.36	14	0.54	811	65.2	0.025	14.3	0.086	228.1	1.46	3	2.5	0.5	174	0.3	4.9	0.051	0.2	2.1	27	11.1	469			
RPD														-8%				-2%													0%												

Appendix J: Source Term Water Quality Prediction Results.

Appendix J. Source Term Water Quality Predictions Used in Site Wide Water and Load Balance

		EWRMF	EWRMF	EWRMF 95% Acidic	LGO Stockpile	Pit Walls - Full Extent	Flooded Pit - Exposed Highwalls	Flooded Pit - Exposed Highwalls 95% Acidic	Tailings Beach	Tailings Beach	Cyclone Sand Dam	Supernatant	Supernatant
Conventional Parameters and Major Ions	Units	Proposed Source Term ¹ - Construction	Proposed Source Term - Operations	Proposed Source Term - Closure	Proposed Source Term - Operations	Proposed Source Term - Operations	Proposed Source Term - Closure	Proposed Source Term - Closure	Proposed Source Term - Operations	Proposed Source Term - Closure	Proposed Source Term - Operations & Closure	Supernatant Bulk Tailings ⁹ , Operations	Supernatant Sulphide/Cleaner Tailings ⁹ , Operations
pH		7.2	8.9	4.5	8.9	8.2	8.1	5.2	8.3	8.3	8.7	7.9	7.9
Specific Conductivity	µmhos/cm												
Total Alkalinity	mg/L CaCO ₃	86										81	126
Total Dissolved Solids (TDS)													
Total Suspended Solids	mg/L												
Hardness - Dissolved	mg/L CaCO ₃												
Calcium (Ca ²⁺)	mg/L	187	740	321	611	212	23	74	25	25	103	76	87
Magnesium (Mg ²⁺)	mg/L	72	199	129	89	10	7	12	9.3	9.3	13	8.8	8.1
Potassium (K ⁺)	mg/L	4	39	65	39	6	3	6	52	52	39	19	15
Sodium (Na ⁺)	mg/L	3.1	35	20	14	2	1	2	20	20	54	14	10
Bicarbonate (HCO ₃ ⁻)													
Carbonate (CO ₃ ²⁻)		52	66	1	66	66	52	2	66	66	66	49	75
Chloride (Cl) ^{-h}		n.a.	4.1	5.3	4.1	2.8	1.7	3.2	4.9	4.9	4.1	5.1	5.0
Fluoride (F) ^{-a}	mg/L	n.a.	1.9	10	1.8	2.0	1.5	3.3	2.3	2.3	2.3	1.7	1.8
Hydroxide (OH) ⁻													
Sulphate (SO ₄ ²⁻)	mg/L	789	1762	5562	1701	512	42	599	55	55	2258	108	102
Nutrients													
Nitrate (as N) ^b	mg/L	n.a.	13		6.1	3.5	1.4	1.4	0.50	0.50			
Ammonia (as N) ^b		n.a.	5.3		2.4	1.4	0.57	0.57	0.20	0.20			
Total Organic Carbon (TOC)		n.a.											
Phosphorus - Dissolved ^h	mg/L	0.30	0.040	0.35	0.040	0.010	0.0048	0.072	0.075	0.075	0.040		
Dissolved Metals													
Aluminum (Al) ^c	mg/L	0.023	3.9	61	1.6	0.21	0.092	3.7	0.038	0.038	0.023	0.041	0.028
Antimony (Sb)	mg/L	0.0008	0.038	0.063	0.017	0.0086	0.0024	0.0057	0.046	0.046	0.039	0.014	0.032
Arsenic (As)	mg/L	0.0002	0.010	0.014	0.013	0.00059	0.00059	0.0013	0.0043	0.0043	0.030	0.00071	0.00091
Barium (Ba)	mg/L	0.021	0.0046	0.0021	0.0040	0.012	0.030	0.004	0.025	0.025	0.0037	0.099	0.11
Beryllium (Be) ^h	mg/L	<DL	0.00020	0.024	0.00020	0.000046	0.000024	0.0022	0.000078	0.000078	0.000020	0.00001	0.00001
Bismuth (Bi) ^h	mg/L	<DL	0.00010	0.00075	0.00010	0.00010	0.00018	0.000068	0.000040	0.000040	0.00072	0.00001	0.00002
Boron (B) ^h	mg/L	<DL	1.00	4.0	1.00	0.23	0.12	0.36	0.39	0.39	1.0	0.050	0.050
Cadmium (Cd)	mg/L	0.001	0.0043	1.0	0.0039	0.0031	0.00044	0.092	0.00036	0.00036	0.0071	0.00013	0.00023
Chromium (Cr) ^h	mg/L	<DL	0.0020	0.0078	0.0020	0.00086	0.00038	0.00070	0.0017	0.0017	0.0020	0.00010	0.00010
Cobalt (Co)	mg/L	<DL	0.00013	1.4	0.00013	0.00013	0.00015	0.13	0.00089	0.00089	0.00013	0.00014	0.00035
Copper (Cu)	mg/L	0.0010	0.044	2.6	0.0030	0.0025	0.0012	0.24	0.0018	0.0018	0.028	0.0027	0.0017
Iron (Fe) ^d	mg/L	0.13	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.0030	0.0030
Lead (Pb)	mg/L	<DL	0.0036	1.83	0.0036	0.0036	0.0025	0.33	0.00031	0.00031	0.0170	0.0001	0.0008
Lithium (Li) ^h	mg/L	0.02	0.013	0.37	0.013	0.009	0.0045	0.033	0.061	0.061	0.013	0.014	0.015
Manganese (Mn)	mg/L	0.1	0.033	150	0.038	0.17	0.10	14	0.119	0.12	0.054	0.15	0.24
Mercury (Hg) ^h	mg/L	n.a.	0.00043	0.00020	0.00043	0.00005	0.00002	0.000067	0.000080	0.000080	0.00043	0.00001	0.00001
Molybdenum (Mo) ^e	mg/L	2.4	0.82	4.0	0.58	0.042	0.021	2.2	0.069	0.069	4.0	0.23	0.31
Nickel (Ni)	mg/L	0.0040	0.018	8.8	0.0093	0.0010	0.00051	0.79	0.0038	0.0038	0.069	0.0013	0.0025
Selenium (Se)	mg/L	<DL	0.012	0.020	0.0031	0.0019	0.0014	0.0022	0.0013	0.0013	0.039	0.0003	0.0005
Silicon (Si)	mg/L	3	35	32	29	2.5	1.5	7.8	5.1	5.1	33	3.2	4.8
Silver (Ag) ^h	mg/L	<DL	0.00010	0.00010	0.00010	0.000042	0.000027	0.000056	0.000041	0.000041	0.00010	0.00001	0.00001
Strontium (Sr)	mg/L	4.9	0.35	9.3	0.79	2.9	0.70	0.84	4.6	4.6	2	4.8	4.9
Thallium (Tl)	mg/L	<DL	0.000080	0.0031	0.000080	0.000038	0.000020	0.00028	0.00025	0.00025	0.000080	0.000040	0.000091
Tin (Sn) ^h	mg/L	<DL	0.0033	0.11	0.0027	0.00020	0.00008	0.01041	0.044	0.044	0.028	0.00004	0.00018
Titanium (Ti) ^h	mg/L	<DL	0.015	0.051	0.015	0.0024	0.0012	0.0046	0.0039	0.0039	0.015	0.0005	0.0005
Uranium (U)	mg/L	0.01	0.24	0.01	0.27	0.010	0.0097	0.01	0.017	0.017	0.010	0.0084	0.0088
Vanadium (V) ^h	mg/L	<DL	0.0040	0.015	0.0040	0.0012	0.00072	0.0014	0.0069	0.0069	0.0040	0.00045	0.00030
Zinc (Zn)	mg/L	0.13	0.14	29	0.13	0.0093	0.0037	2.6	0.0048	0.0048	0.16	0.0012	0.0014

Notes

^a Fluoride for tailings beach and sand dam limited by theoretical upper bound solubility limit for fluorite

^b Calculated based on Ferguson and Leask.

^c Aluminum upper bounds based on theoretical solubility limit of Al(OH)₃

^d Iron upper bounds based on theoretical solubility limit of siderite to provide more conservative source term

^e Predicted molybdenum concentrations are lower than the upper range recorded from existing monitoring records. This reflects the lower cut-off for proposed project than occurred in previous mining.

^f Data represents the 95th percentile of complete SRK monitoring data record from Patsy Dump waste rock seepage site PD5 (no predictive work conducted).

^g Data represents P50 of results as analyzed from metallurgical testwork (no predictive work conducted).

^h Results in kinetic testwork often less than detection limit

Appendix K: Source Term Water Quality Prediction Results
for Increasing Proportions of Acidic Waste Rock.

Appendix K. Source Term Water Quality Predictions With Increasing Degrees of Acidity

Conventional Parameters and Major Ions	Units	5% acidic WR	20% acidic WR	50% acidic WR	80% acidic WR	95% acidic WR
pH		~8	~8	~7	~5	~4
Calcium (Ca ²⁺)	mg/L	691	547	383	332	321
Magnesium (Mg ²⁺)	mg/L	196	185	162	140	129
Fluoride (F ⁻) ^a	mg/L	2.0	2.2	2.7	20	37
Sulphate (SO ₄ ²⁻)	mg/L	1894	2315	3447	4821	5562
Dissolved Metals						
Aluminum (Al) ^c	mg/L	0.16	0.12	0.027	9.4	61
Antimony (Sb)	mg/L	0.088	0.084	0.075	0.067	0.063
Arsenic (As)	mg/L	0.010	0.011	0.012	0.014	0.014
Cadmium (Cd)	mg/L	0.0045	0.0044	0.012	0.87	1.0
Copper (Cu)	mg/L	0.074	0.058	0.026	2.2	2.6
Iron (Fe) ^d	mg/L	0.0000	0.0000	0.0000	0.0016	0.066
Lead (Pb)	mg/L	0.082	0.065	0.031	1.8	1.8
Manganese (Mn)	mg/L	0.033	0.035	0.074	127	150
Molybdenum (Mo) ^e	mg/L	1.5	1.8	2.5	3.1	4.0
Nickel (Ni)	mg/L	0.041	0.041	0.063	7.4	8.8
Selenium (Se)	mg/L	0.037	0.035	0.031	0.027	0.025
Zinc (Zn)	mg/L	0.14	0.13	0.21	24	29